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# Canada

as a

## Field for British Branch Industries



Department of Trade & Commerce

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Ottawa, Canada

1922

and





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**CANADA AS A FIELD FOR BRITISH  
BRANCH INDUSTRIES**

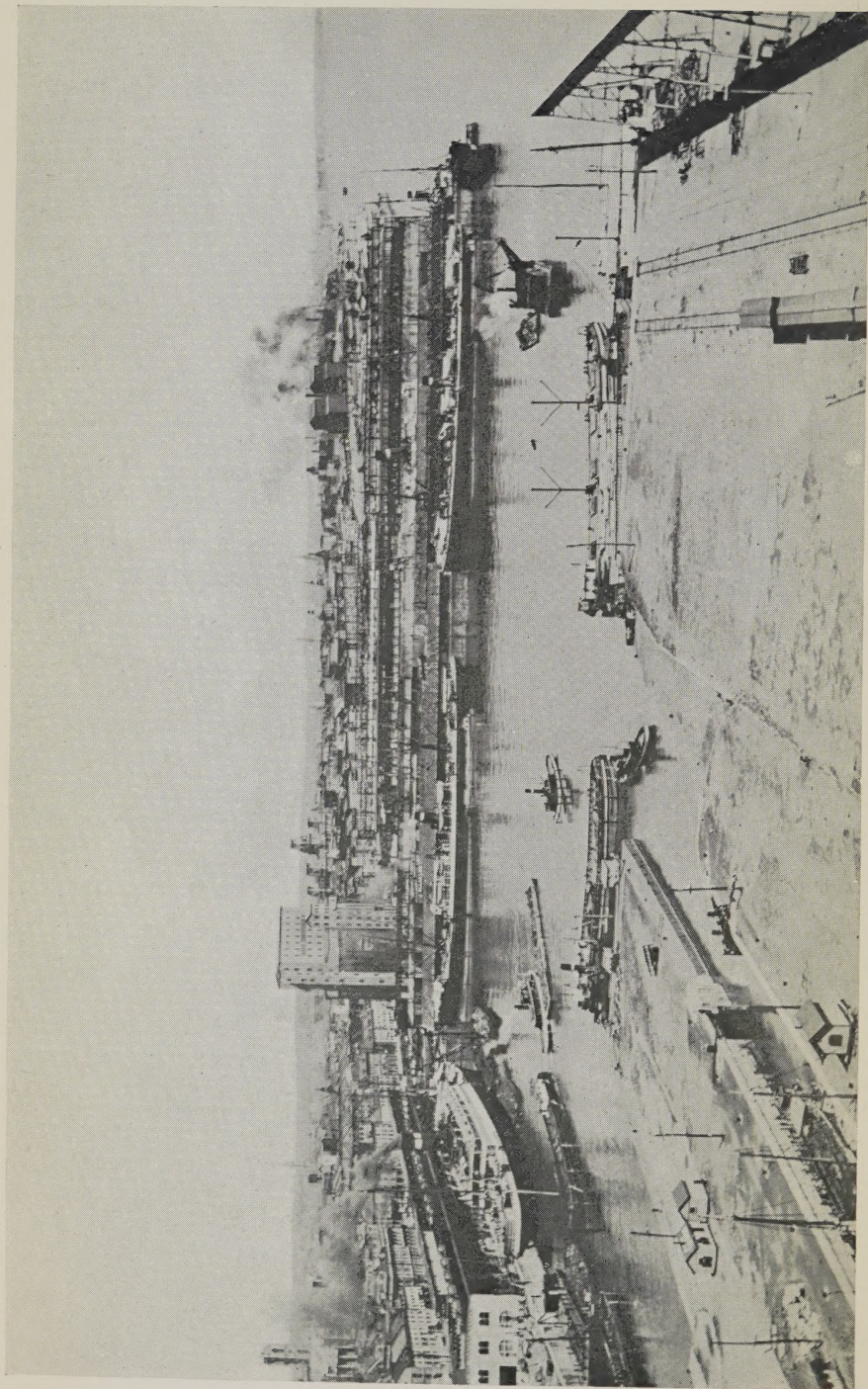






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MONTREAL HARBOUR, P.Q.



*Canada. Commercial Intelligence Service*

# CANADA

AS A

## FIELD FOR BRITISH BRANCH INDUSTRIES



DEPARTMENT OF TRADE AND COMMERCE  
COMMERCIAL INTELLIGENCE SERVICE  
OTTAWA, CANADA

1922





## TABLE OF CONTENTS

	PAGE
INTRODUCTORY	
CHAPTER I. THE ECONOMIC AREAS OF CANADA .....	3
The Atlantic Area—Southwestern Quebec and Southern Ontario—The Prairie Provinces—The Pacific Slope.	
CHAPTER II. NATURAL RESOURCES IN RELATION TO INDUSTRY.....	13
Economic Minerals—Forest Products—The Chemical Industry—Fur Farming—Fishing and Fish Canning—Agriculture, Live Stock and Dairying.	
CHAPTER III. CANADIAN TRADE, PAST AND PRESENT.....	37
Growth of Industry—Trade Tables.	
CHAPTER IV. LABOUR IN CANADA.....	49
Economic Influences—Immigration—Employment Service—Technical Education—Trade Unionism—Industrial Councils—Strikes and Lock-outs—Labour Legislation—Wages and Working Hours.	
CHAPTER V. WATER-POWERS AND THEIR INDUSTRIAL IMPORTANCE.....	67
Water-Powers of the British Empire—Water-Powers of Canada—Water-power compared with Coal—The Central Station Supply System—Power in the Various Provinces—Rates and Cost of Power—Table of Average Monthly Bills.	
CHAPTER VI. CANADIAN TARIFFS AND TRADE AGREEMENTS.....	91
British Preferential Tariff—Intermediate Tariff—The Anti-Dumping Clause—Valuation of Depreciated Currency—Drawbacks—Sales Tax under Special War Revenue Act.	
CHAPTER VII. TRANSPORTATION FACILITIES.....	99
Railways—Canals—Shipping.	
CHAPTER VIII. COMPANY INCORPORATION AND TAXATION.....	105
Dominion Letters Patent—Fees—Supplementary Letters Patent—Regulations—Variation in Provincial Legislation—Dominion Income Tax—Other Taxation.	
CHAPTER IX. A NOTE ON THE CANADIAN BANKING SYSTEM.....	111
APPENDIX A. AN ANALYSIS OF INDUSTRIAL CAPITAL IN CANADA.....	117
APPENDIX B. THE PROBLEMS OF THE CANADIAN MARKET.....	123
REFERENCES.....	126
GENERAL INDEX.....	131



## MAPS AND DIAGRAMS

	PAGE
NATURAL RESOURCES MAP OF CANADA.....	Facing 24
GRAPH OF CANADIAN TRADE, 1868-1921.....	“ 38
DIAGRAM SHOWING GROWTH OF MANUFACTURES, 1880-1921.....	41
GRAPH OF IMMIGRATION BY CLASSES, 1904-20.....	51
GRAPH SHOWING APPLICATIONS AND PLACEMENTS BY EMPLOYMENT SERVICE OF CANADA.....	52
MAP OF CANADIAN POWER SOURCES.....	Facing 68
GRAPH OF POWER DEVELOPMENT.....	71
DIAGRAM OF RELATIVE POWER BY PROVINCES.....	75
TRANSPORTATION MAP OF CANADA.....	Facing 102

## ILLUSTRATIONS

Montreal Harbour.....	Frontispiece
Halifax Harbour.....	Facing page 4
Hydraulic Lift Lock, Peterborough-Trent Canal....	“ 6
Shipping, Burrard's Inlet, Vancouver.....	“ 8
Carrier, Thetford Asbestos Mine.....	“ 14
Copper-Nickel Smelter, Sudbury, Ont.....	“ 16
Smelter at Trail, B.C.....	“ 22
Interior of Quebec Paper Mill.....	“ 26
Spraying Orchards, Nova Scotia.....	“ 32
Interior of Linen Factory, Guelph, Ont.....	“ 40
Construction Work, Queenston-Chippawa Development.....	“ 72
Power Houses, Coquitlam-Buntzen Development, B.C.....	“ 76
Interior of Generating Station, Ontario Power Company, Niagara .....	“ 80
Power Plant, Shawinigan System, Quebec.....	“ 82
Welland Ship Canal—Construction.....	“ 100
King and Yonge Streets, Toronto.....	“ 112
Head Office, Bank of Montreal, Montreal.....	“ 112





## INTRODUCTORY

*In this pamphlet, Mr. P. W. Cook, Junior Trade Commissioner, with valuable assistance generously accorded by officials of the Natural Resources Intelligence and the Dominion Water Power Branches of the Department of the Interior, the Department of Labour, and the Department of the Secretary of State, has attempted to present certain facts and figures dealing with the Canadian industrial situation, in such form as to attract the attention of British manufacturers to the field which the Dominion presents to their energies and enterprise.*

*The situation as it appears to Canadians is that the Dominion possesses immense possibilities for industrial development. It is well served by a network of railways, and for export trade excellent steamship facilities provide connections with all the principal countries of the world. In addition, Canada has a Commercial Intelligence Service with some twenty-two Trade Commissioner offices established abroad at strategic trade centres. Statistics in themselves show that the Dominion has developed her manufacturing industries to a remarkable degree during the past two decades. Not only is the home market being supplied with made-in-Canada goods to a constantly increasing extent, but there is no little foundation for the hope that Canada's export trade is on the threshold of important development.*

*For some years and in growing numbers United States manufacturers have been realizing that Canada presents favourable opportunities for the establishment of branch industries. The demonstration of this is that they have erected some six or seven hundred branch plants, and the erection of many more is projected. From these not only is the home market supplied, but in many instances commodities are exported to various parts of the Empire and to other countries. Thus United States capital is doing for Canada what in earlier years British capital did for the United States.*

*Canadians welcome this influx of American capital, enterprise and energy. To all intents and purposes these branch industries are Canadian, and help to maintain the steady industrial progress so necessary to the prosperity of the Dominion. Yet contemplation of this addition to their national wealth contains within it a certain regret for Canadians, perhaps only now commencing to be felt; it is that manufacturers of the United Kingdom are taking so little part in the industrial development of the country. This regret does not spring from selfishness, for although it may seem over-confident to*

say so, there is little fear of a lack of new industries in the future. But Canada is British through and through and the hope of Canadians is that the Dominion may develop in the future as it has in the past, along British lines.

British manufacturers have over a long period of years built up a magnificent reputation throughout the world for the quality of their goods, for their probity, for their business-like methods. It is felt (and here perhaps selfishly) that Canada would greatly benefit by the inclusion among her people of as many as possible of those who have built up such a splendid commercial fabric in the United Kingdom. So far the number who have established themselves is comparatively small; yet consultation with those who have taken the step may show that they consider their enterprise justified both by present results and by future prospects.

Canadians do not presume to advise British manufacturers as to the best course to pursue; yet they venture to believe that many of them can find in this Dominion a profitable outlet for their enterprise, and a reward no less and perhaps greater than that which has accrued to their competitors from the United States. But certain it seems that if the former do not act, the latter will, and in constantly increasing numbers.

There is one further point in connection with this subject that is worth careful consideration. The late war amply demonstrated the tremendous advantage to Great Britain of having comparatively close to her a part of the Empire industrially developed; even if but partially. Canada, after her resources had been fully mobilized, was able to supply enormous quantities of munitions to the allied armies.

H. R. POUSSETTE,  
Director, Commercial Intelligence Service.

OTTAWA, January 1922.



# **THE ECONOMIC AREAS OF CANADA**



## CHAPTER I

### THE ECONOMIC AREAS OF CANADA

Partly on account of climatic and geographical conditions, and partly on account of distinct historical periods of settlement and exploitation, Canada is divided into four major economic areas. The first, lying towards the Atlantic, includes the Maritime Provinces and eastern Quebec. The second, centring historically on the cities of Quebec and Montreal founded by early French settlers, extends from Quebec City to the head of lake Erie. This area is the most closely populated and industrially active in the Dominion. The third area is the comparatively modern middle west, which is almost wholly agricultural. The fourth area, something of a world to itself, is the fertile region of the Pacific slope.

#### §1. THE ATLANTIC AREA

The important section of the Atlantic area is the Maritime Provinces of New Brunswick and Nova Scotia. Prince Edward Island need not be considered here as it is wholly agricultural except for the industry of fur farming. The most striking features of the Maritime Provinces are the extent of the irregular coastline, the number of admirable ocean ports and the remarkable geographical advantage they afford for world-wide commerce. (It may not be generally realized, that Halifax is 500 miles nearer to Rio de Janeiro and Buenos Ayres than is New Orleans.) These provinces bear to the continent of North America much the same geographical relationship as the British Isles bear to Europe. The population of the Maritime Provinces and of eastern Quebec, is less affected by the fluctuations of business and economic conditions than that elsewhere in the Dominion. The climate is not subject to such extremes of temperature as it is more inland. The winters are followed by warm summers with much rainfall. Vegetation shows remarkably fast development, and the cool summer nights are of great value to dairying and truck gardening. The soil is particularly adapted to mixed farming and poultry raising. Fruit farming is engaged in to a very considerable extent, and there is no reason why it should not be carried very much further.

Economically the Maritime Provinces are chiefly concerned with the production of coal and iron (Nova Scotia), agriculture, fishing, and lumbering. Fishing and canning are, of course, very highly developed and include the



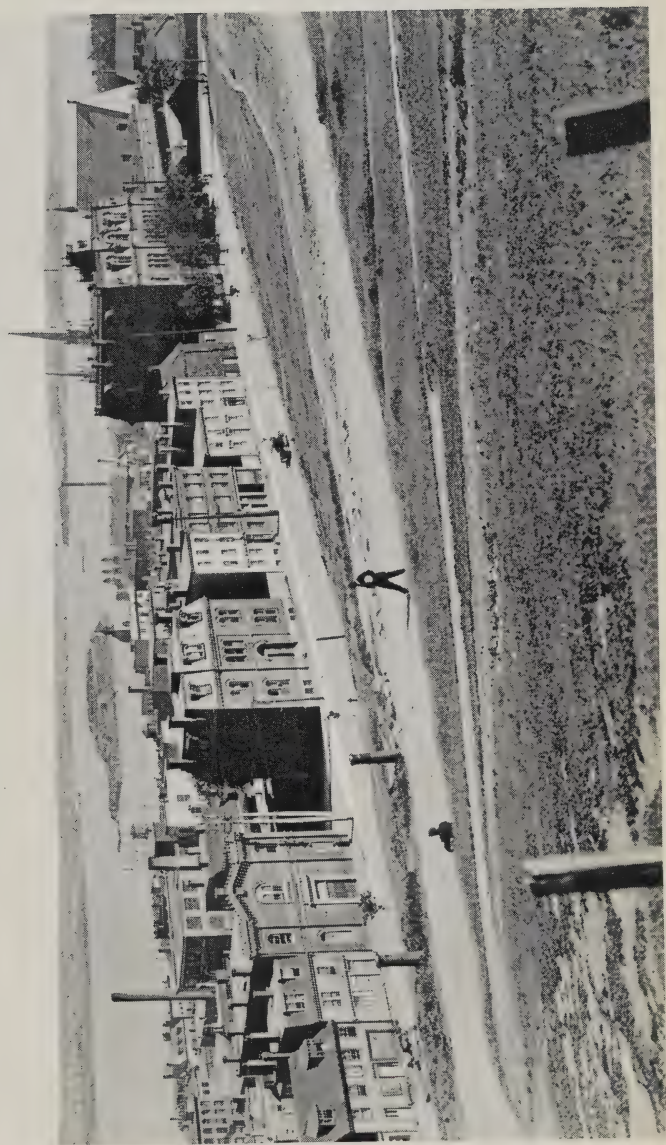
## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

unique industry of lobster canning. Cane-sugar refining is carried on in both Nova Scotia and New Brunswick. Among other industries may be cited cotton spinning (for which the humid climate is admirably suited), tanneries, textile works, breweries, shipbuilding, oil refining, wood-working, manufacture of agricultural implements, and others of lesser importance.

Shortage of hydro-electric power and the factor of distance from the chief domestic markets of Ontario and Quebec, have prevented the Maritime Provinces from developing industry to the extent warranted by their resources and the advantageous position they hold in respect of outside markets. Water-power development, however, has been undertaken at several points in both Nova Scotia and New Brunswick on a scale which promises to be of great value to industry.

The great commercial asset of the Maritime Provinces is unquestionably their harbours. Those of Halifax, St. John and Sydney (Cape Breton) may be ranked high among the harbours of the world. The land-locked harbour of Halifax has long been used by the Royal Navy as the North Atlantic station. It is one of the largest and safest, not only in North America but probably in the whole British Empire, and has in addition admirable wharfage accommodation and warehouse facilities. The harbour is served by the transcontinental line of the Canadian National Railway, and several local railways. The steamship lines using Halifax harbour include the Canadian Government Merchant Marine to Liverpool, London, Glasgow, Cardiff, Swansea, Brazil, British East Indies, Straits Settlements, British West Indies, Cuba and Newfoundland; the Canada-Jamaica Line to Cuba and Jamaica; the Canada-South Africa Line to Capetown, Port Elizabeth, Durban and Delagoa Bay; the Canadian Pacific Steamships, Limited, to the British Isles; the Cunard Line to the British Isles; the Donaldson Line to Newfoundland; the Furness Line to British ports and France; the Manchester Liners, Limited, to Manchester and St. John; the Nova Scotia Steamship Company to New York; the Red Cross Line to New York and Newfoundland; the Royal Mail Steam Packet Company to Bermuda, the British West Indies and British Guiana; and the White Star Dominion Line to Liverpool.

The Port of St. John, N.B., on the Bay of Fundy, at the mouth of the St. John River, is 275 miles nearer the chief domestic markets of the interior. The volume of traffic through this port has been exceeded in recent years by only one other eastern Canadian port, that of Montreal. It is served by the Canadian Pacific Railway and the Canadian National Railways transcontinental systems and by the Shore Line railway to the United States border at St. Stephen. Among the steamship lines operating



VIEW OF HALIFAX HARBOUR FROM THE CITADEL; FORT GEORGE ISLANDS IN THE DISTANCE





## THE ECONOMIC AREAS OF CANADA

through the port are the Canadian Pacific Ocean Services, the Canadian Government Merchant Marine, the South African and New Zealand Line, the Royal Mail Steam Packet Service, Anchor-Donaldson Line, Cunard Line, Canadian French Line, Furness Line, Head Line, Norwegian Line, Fracanda Line, Houston Line, Manchester Line, Ellerman-Bucknalls Line, Eastern S. S. Service, D. A. R. Line. The ports touched by these several lines are Glasgow, Liverpool, London, Avonmouth, Manchester, Belfast, Dublin, Havre, Bordeaux, St. Nazaire, Christiania, Antwerp, Calcutta, Ceylon, South African, Australasian and West Indian ports, Bermuda St. Kitts, Antigua, Montserrat, Dominica, St. Lucia, Barbados, St. Vincent, Grenada, Trinidad, Demerara, Buenos Aires, Montevideo, Rosario, Havana, Portland, Me., Boston, Mass., and Digby, N.S. Several small freighting steamer lines cover inter-provincial ports on the Bay of Fundy.

The value of these ports to the Canadian manufacturer lies in their proximity to the old world markets. The actual distances from both Halifax and St. John to the British Isles and France are less than from New York. (A table of comparative distances is given on the transportation map.) These are the winter ports of Eastern Canada; from May until December the port of Montreal holds the predominant place.

Following the water route of the St. Lawrence inland through the eastern and purely agricultural districts of Quebec to Quebec City, the second economic area of Canada is reached.

### §2. SOUTHWESTERN QUEBEC AND SOUTHERN ONTARIO

This is essentially the intensive industrial area, and may be fairly called the Midlands of Canada. It has become so by reason of various factors, chief among which are the availability of practically limitless hydro-electric power, the adequate supply of labour resulting from comparatively dense population, and the proximity of the United States across a waterway common to both countries.

The most easterly city of manufacturing importance is Quebec itself, situated at the junction of the St. Charles and the St. Lawrence rivers. Quebec is admirably served by both land and water transportation. It is on the main line of both the Canadian National and the Canadian Pacific railways. Other railways connect with the United States to the south, and the mining and lumbering districts to the north. The port of Quebec has been recently greatly developed, and for eight months in the year occupies the position of an inland harbour 400 miles from the Atlantic, accessible to liners of heavy tonnage. During the summer months some of the major Atlantic steamship lines serve this port. The power situation

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

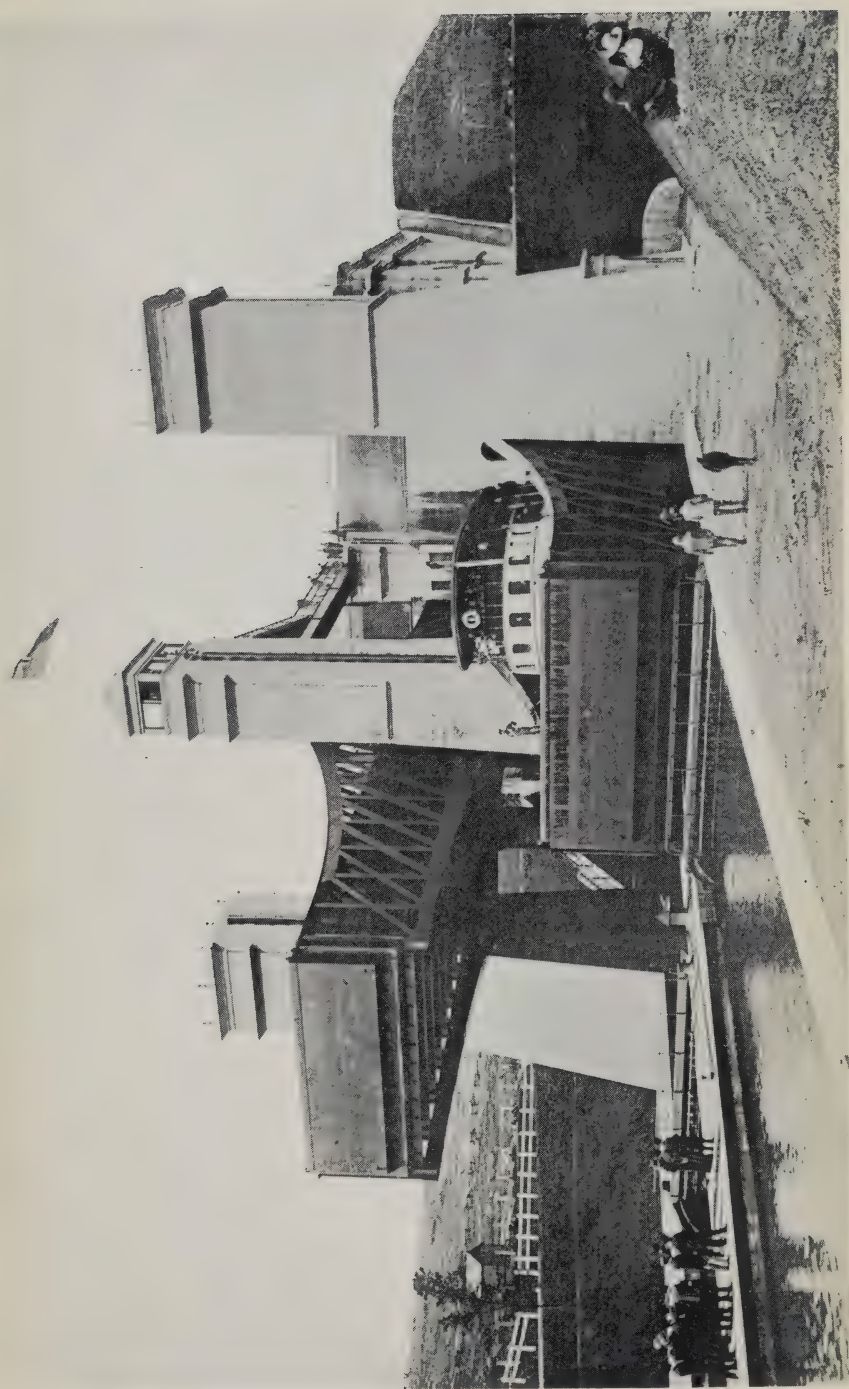
is excellent. As a manufacturing centre Quebec ranks seventh in importance in the Dominion. Chief among its industries are shipbuilding, boots and shoes, leather tanning, food products, pulp and paper, textiles including cotton spinning, machine shops, boiler shops and other steel and iron plants, corset factories, breweries and tobacco manufactures. The population of Quebec in 1921 was 116,850, and the annual value of its manufactured products is approximately \$40,000,000. Industry is being still further developed on the lines of flour mills, sugar refineries and asbestos works, along the deep water frontage and on both shores of the St. Charles river.

The cities of Levis, Three Rivers, St. Hyacinthe, Sorel, Lachine, Joliette, Hull, Valleyfield, Sherbrooke and a number of mining towns, are of very considerable industrial importance.

But the most important city industrially is Montreal, the largest city in Canada, one of the oldest on the North American continent, and the principal financial and industrial centre of the Dominion. Its population is about 800,000. Montreal is fortunately located at the head of ocean navigation on the St. Lawrence river at a point where the immense water-borne traffic of the Great Lakes is transferred to ocean steamers. The port of Montreal, as regards traffic, is unique in the British Empire. Although it is open for only seven and one-half months in the year, it is the second greatest port in America, and the seventh in the world. The value of trade carried via Montreal from May until November is about \$700,000,000, or roughly one-third of the entire trade of Canada. The harbour waterfront is 32 miles in length; there is accommodation for over 100 vessels; and there are in addition some twenty-three double-story transit sheds available for the storage of goods destined for shipment. Since 1911 the total value of traffic through this port has increased nearly 350 per cent.

Along with this remarkable asset are many sources of hydro-electric power, and a fertile supply of French-Canadian labour, and these have resulted in developing industry to a very high degree. Manufacturing costs are low, the labour market is ample for industrial demands, power is to be had in abundance, and railway lines or steamship routes radiate in every direction. In addition the head offices of many of the Canadian chartered banks and other financial institutions are situated in this city.

Crossing the Ottawa river into the province of Ontario, a number of small but important cities are met with along the north shore of the St. Lawrence and lake Ontario; among these are Brockville, Belleville, Kingston, Oshawa, Peterborough and Lindsay, all of which are growing in industry and manufacture.



HYDRAULIC LIFT LOCK, PETERBOROUGH—TRENT CANAL, ONTARIO





## THE ECONOMIC AREAS OF CANADA

The chief city of Ontario is Toronto, the provincial capital, which rivals **Montreal** in size and importance. Its growth during recent years has been very rapid, in a great measure because of its attraction for United States branch industries. Power is derived from Niagara and is probably cheaper in Toronto and the other cities of southern Ontario than elsewhere on the continent. Geographically, Toronto is fortunately situated for the manufacturer whose market lies in the United States, or central and western Canada. Toronto is the principal port on the Great Lakes, and its harbour facilities are being greatly developed. It is on the main line of the transcontinental railways.

To the southwest of Toronto lies the Niagara-Windsor peninsula. This is the most southerly part of the Dominion and experiences a warm climate and long summer. The soil is extraordinarily fertile, and fruit farming in various forms is carried on to a very great extent. As a manufacturing district it is exceedingly important, not only because of the availability of Niagara power but also because of its nearness to the United States and the ease with which imports and exports can be handled by the industries. In consequence industry is highly developed from Hamilton, at the west end of lake Ontario, to the Border Cities of Windsor, Walkerville and Ford on the Detroit river. These cities, and also London, Chatham, Guelph, Brantford, Kitchener, Welland, St. Catharines and a number of others, are growing rapidly. Practically all classes of manufactures are produced in this area, not only by Canadian firms but by a great number of United States subsidiaries and branches established on the Canadian side of the border. Competition has produced a remarkable degree of mechanical efficiency, and a very large proportion of the entire output of Canadian manufactured products originates in this area.

The remaining industrial areas of Ontario are to be found from the city of Ottawa along the Ottawa river to North Bay and Sudbury, and on the eastern shores of Georgian bay and lake Huron. Pembroke, Carleton Place and adjacent towns are chiefly concerned with the woollen industry; Owen Sound, Parry Sound and the districts north of lake Simcoe contain a number of well-developed furniture factories. There is little industry, however, in north-western Ontario. The power development on the Nipigon river, near Port Arthur and Fort William, promises a future growth. These last-mentioned cities are at present mainly important as being the head of the inland water route. A great portion of Western Canada grain is loaded through their elevators for export *via* the Great Lakes.

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

### §3. THE PRAIRIE PROVINCES

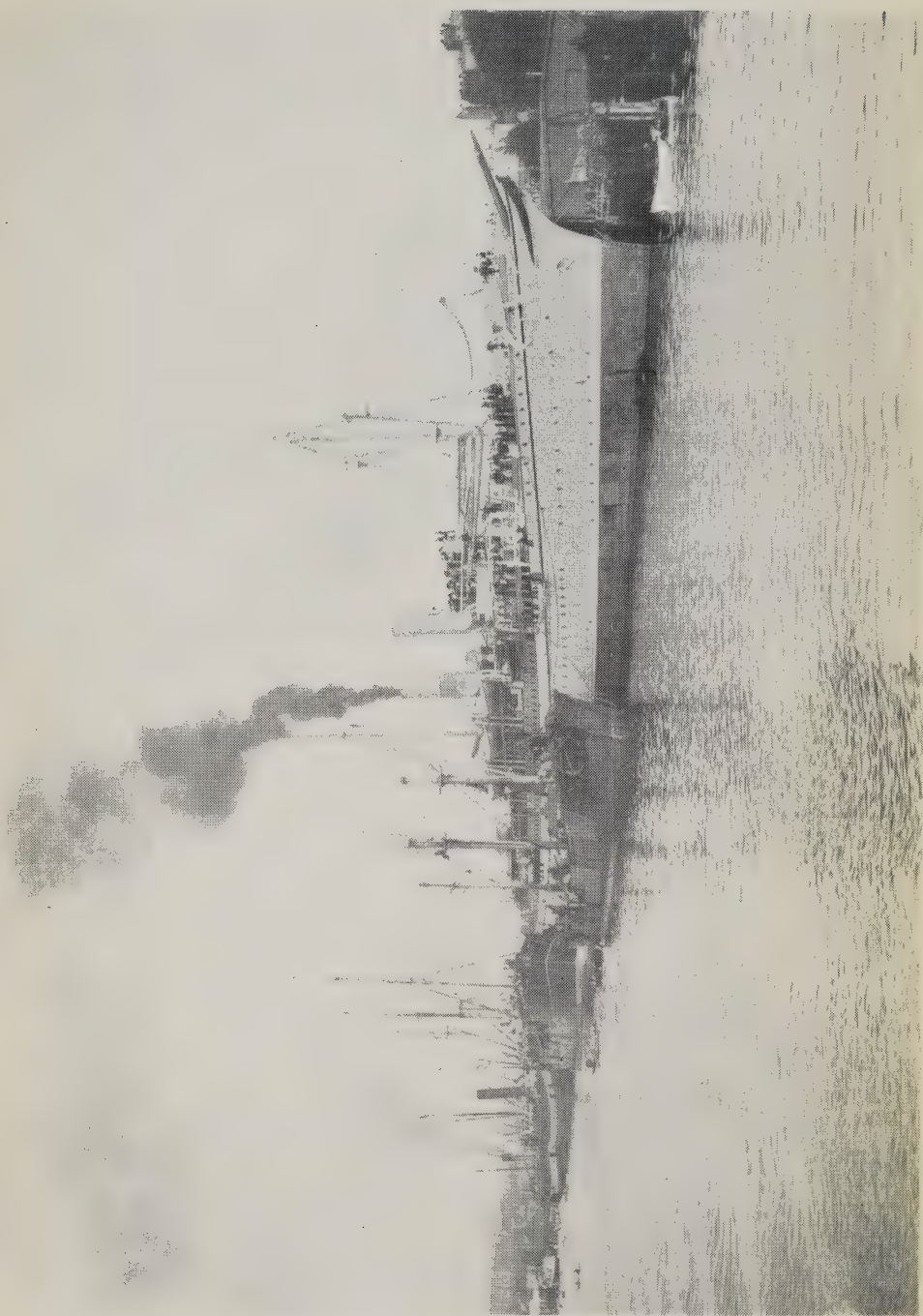
As their name indicates, the Prairie Provinces form an inland plain on which there is little water-power. They constitute the great agricultural and wheat-growing area of Canada, and as such are among its greatest assets; industrially they have not yet attained marked development. In this respect the city of Winnipeg is an exception; industry here is assuming greater importance, chiefly by reason of available water-power from the Winnipeg river and the fact that it is the railway centre of Western Canada. The use of natural gas for power purposes is attracting industries to the Medicine Hat district. In the more important cities there is, of course, limited industry deriving its power from coal. (It is worth remarking here that the provinces which have no water-power are those in which bituminous coal deposits are found.) A supply of water-power is, however, being developed on the Bow river near Calgary. Edmonton, as the gateway to the new Peace River and Mackenzie district, is likely to develop in the near future.

### §4. THE PACIFIC SLOPE

The Pacific Slope, or province of British Columbia, may almost be regarded as a second Canada. It is peculiarly distinct in many respects. Situated at a great distance from the older development of Eastern Canada, it is a country apart, and the barrier of the Rocky mountains adds to its almost complete economic isolation. The Coast climate, also, is peculiar to itself. In place of cold winters and hot summers there is a more equable medium throughout the year very similar to that of the south coast of England. As a result, mixed farming, fruit growing and dairying form a great part of its economic life. Cotton and silk spinning are also favoured by the climate.

The sources of power and raw material in British Columbia are very great, exceeding even those of Quebec and Ontario. The latter include more than half the standing timber of the whole Dominion, valuable coal, iron and other mineral deposits, coast and sea fisheries. Industrially, British Columbia has developed rapidly, not only in the cities of Vancouver and Victoria but in many smaller towns throughout the province. But it is industry less concerned with the domestic market of Canada and the export market to Europe, than with those of the western States, Australasia, and the Far East.

Export from British Columbia is facilitated by the admirable harbours of Vancouver and Victoria. Vancouver is served by both the Canadian National and Canadian Pacific railways, the Northern railway from Washington; the Great Northern; Northern Pacific; Chicago, Milwaukee and St. Paul; Union Pacific; Pacific Great Eastern; and a number of other United States



SHIPPING, NORTH SIDE OF BURRARDS INLET, ONE OF VANCOUVER'S FOUR HARBOURS





## THE ECONOMIC AREAS OF CANADA

lines. Practically all ocean steamship lines operating on the Pacific use the ports of Vancouver and Victoria. These lines include the Atlantic Line to California; the Blue Funnel Line to Japan and China, and *via* the Panama canal to London and Liverpool; the Border Line Transportation Company to the state of Washington; the Canadian-Australasian Royal Mail line to Honolulu, New Zealand and Australia; the Canadian Government Merchant Marine, Limited, to Australia, New Zealand, India, China and Japan; the Canadian Pacific Steamships, Ltd., to Japan, China, Washington, Prince Rupert and Alaska; the Canadian Robert Dollar Steamship Company to China, Manila and Singapore; the "Harrison Direct" Line to Seattle, San Francisco, Los Angeles, *via* the Panama canal to Liverpool, London and Glasgow; the Isthmian Steamship Line from the Pacific Coast ports to New York and the United Kingdom; the Osaka Shosen Kaisha Line to Japan, China, Vladivostok, Singapore and Bombay; the Pacific Steamship Company to Californian and Alaskan ports; the Union Steamship Company to British Columbia and Alaska; the Société Générale de Transports Maritimes to the Mediterranean; and, from Victoria only, the Nippon Yusen Kaisha Line to Japan, China and Manila.

Esquimalt, close to Victoria, and Prince Rupert, the Pacific terminus of the Canadian National Railway, will be of great importance when Northern Alberta and British Columbia are further developed.

All things considered, the facilities which British Columbia affords industry, particularly that interested in the markets of Australasia, China, Japan and India, are worthy of close consideration.

In summing up the four economic areas of Canada, the following broad conclusions appear. The eastern area of the Maritime Provinces requires the development of water-power to replace coal. It is conservative and to a great extent agricultural. It possesses extraordinary natural resources and distinct geographical advantages as regards the European and South American markets. Western Quebec and Southern Ontario offer unlimited power and labour and easy access to the United States and the chief points of the domestic market. The water route by the Great Lakes is of first importance to the import and export of bulk commodities such as coal, iron ore and grain. The Prairie Provinces, with the exception of one or two cities, are handicapped by lack of power and by nature are more adapted to agriculture than to industry until such time as local demand will permit the development of further local industries. The Pacific Coast, with admirable power sources and rich in raw material, is yet geographically unsuited for the production of manufactures designed for the eastern markets of Canada, but substitutes therefor great facilities for trade across the Pacific and to the Western States.



# NATURAL RESOURCES IN RELATION TO INDUSTRY

*[Material supplied by Natural Resources Intelligence Branch,  
Department of the Interior.]*





## CHAPTER II

### NATURAL RESOURCES IN RELATION TO INDUSTRY

It is impossible within the scope of these pages to discuss the details of Canadian manufacture and the opportunities which exist for the production of specific commodities. This point is more readily determined by studying the list of imports of United States manufactured articles into Canada, or by comparing the export lists of the United States and Canada, as it may be postulated that whatever is produced in the northern States may be equally well produced in the Dominion. Thus, if the United States export lists show an extensive export of a certain commodity to, say, the United Kingdom or the British West Indies, and Canadian lists show a comparatively small export of the same commodity, it is reasonable to assume that increased production might well be undertaken in the Dominion.

The following brief notes are designed to convey some idea of the situation in regard to the availability and exploitation of essential raw materials. As such, they may prove their value by indicating a possible increased development or a source of supply which might otherwise not be taken into consideration.

#### §1. ECONOMIC MINERALS

##### Arsenic

Production in 1920.....	2,408 tons valued at \$313,575
Production in 1919.....	3,192 tons valued at \$508,770

The main source of arsenic production in Canada is as a by-product of the silver-cobalt-nickel ore reduced in Welland, Ontario.

##### Asbestos

Production in 1920.....	199,573 tons valued at \$14,792,201
Production in 1919.....	136,199 tons valued at \$11,000,000

About 88 per cent of the world's supply of asbestos is produced in the province of Quebec, and is at present nearly all exported to the United States in a crude or semi-manufactured form. Over one-half million dollars' worth of manufactured goods are reimported yearly. While there are fourteen companies engaged in the production of crude asbestos, until recently only two companies in Canada manufactured asbestos products. The Canada Johns Manville Company are erecting a plant to

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

manufacture in Canada instead of importing from their parent company in the States.

The great problem of the asbestos producer is to dispose of the low-grade materials. The building industry, however, offers an opportunity to dispose of it for the manufacture of asbestos, cement, shingles and lumber. With the increased production of these goods a larger export trade than exists at present should be developed.

First-grade crude asbestos is valued at \$2,000 per ton and low-grade material "asbestic" sells as low at \$2.65 a ton.

### **Barytes**

Production in 1920.....	\$132,000
Production in 1919.....	\$135,000

Barytes occurs in nearly all the provinces of the Dominion, but is at present produced in paying quantities only in Nova Scotia and northern Ontario.

### **Building and Ornamental Stone, Marble and Grindstones**

Production in 1920.....	\$5,164,000
Production in 1919.....	\$4,000,000

Desirable sandstones of various colours suitable for structural purposes and for making grindstones are produced in the Maritime Provinces. Large areas of granite suitable for structural and monumental purposes exist but have not been developed as they deserve. Crystalline limestones or marble occur at several places and are used for lime and as a flux. Large quantities of limestone are quarried in Quebec and also some excellent marbles that should be more widely used for decorative purposes. Important granite quarries are located in the Eastern Townships and other parts of the province. Slate is produced in Richmond county. Valuable building and ornamental stones are being produced in Ontario including some exceedingly valuable deposits of different coloured marbles in Hastings county which are not being developed or used to anything like the extent of which they are capable. This area produces about 15 varieties and Canada as a whole about 27 different kinds. Marble is also found in British Columbia, and a very fine grade of limestone known as "Tyndall" is extensively quarried in Manitoba. Canada should thus be able to supply all the marble and similar decorative stones required in the building and other industries and also develop a successful export trade.



CARRIER, THETFORD ASBESTOS MINE, P.Q.





## NATURAL RESOURCES IN RELATION TO INDUSTRY

New Brunswick has large deposits of stone suitable for making grindstones and pulp-stones, much of which is exported to the United States for manufacture. Manufactured grindstones are exported as well, but similar products are imported from the United States to the value of one-quarter of a million dollars yearly. There is no reason why all the grindstones and hones used in Canada should not be manufactured within the Dominion, together with a large surplus for export.

### Cement

Production in 1920..6,652,000 barrels, valued at \$14,800,000

Production in 1919..4,990,000 barrels, valued at \$9,800,000

Conditions permitting the economic production of cement exist in Nova Scotia, Quebec, Ontario, Manitoba, Alberta, and British Columbia. There are now about six plants in operation.

### Clays and Clay Products

Total value of clay products in 1920.....\$10,533,000

Total value of clay products in 1919..... \$7,658,000

Excellent clays and shales are found distributed over almost all parts of the Dominion, and there are several large producing centres for clay products in the vicinity of Montreal, Quebec; at Toronto, Ontario; at Clayburn, in British Columbia; and at Medicine Hat, in Alberta, together with numerous plants in other localities. Among these clays are several deposits of good fire-clays, some of which are being used. About \$3,000,000 worth of fire-clay products are imported yearly, which indicates that this industry might be further developed. There is no factory in Canada making ornamental products that would appeal to tourists who are generally looking for souvenirs; and there is a wide opportunity for the establishment of plants for the manufacture of structural clay products and art pottery. Clays approaching English ball clay in character are found in Nova Scotia, northern Ontario, Saskatchewan, and British Columbia. Those in Nova Scotia and Saskatchewan are partially developed.

Bentonite deposits occur in British Columbia that will compete with the American output as regards quantity and quality. (See also Kaolin.)

### Coal

Production in 1920.....16,624,000 tons, valued at \$77,327,000

Production in 1919.....13,586,000 tons, valued at \$54,052,000



## NATURAL RESOURCES IN RELATION TO INDUSTRY

New Brunswick has large deposits of stone suitable for making grindstones and pulp-stones, much of which is exported to the United States for manufacture. Manufactured grindstones are exported as well, but similar products are imported from the United States to the value of one-quarter of a million dollars yearly. There is no reason why all the grindstones and hones used in Canada should not be manufactured within the Dominion, together with a large surplus for export.

### Cement

Production in 1920..6,652,000 barrels, valued at \$14,800,000

Production in 1919..4,990,000 barrels, valued at \$9,800,000

Conditions permitting the economic production of cement exist in Nova Scotia, Quebec, Ontario, Manitoba, Alberta, and British Columbia. There are now about six plants in operation.

### Clays and Clay Products

Total value of clay products in 1920.....\$10,533,000

Total value of clay products in 1919..... \$7,658,000

Excellent clays and shales are found distributed over almost all parts of the Dominion, and there are several large producing centres for clay products in the vicinity of Montreal, Quebec; at Toronto, Ontario; at Clayburn, in British Columbia; and at Medicine Hat, in Alberta, together with numerous plants in other localities. Among these clays are several deposits of good fire-clays, some of which are being used. About \$3,000,000 worth of fire-clay products are imported yearly, which indicates that this industry might be further developed. There is no factory in Canada making ornamental products that would appeal to tourists who are generally looking for souvenirs; and there is a wide opportunity for the establishment of plants for the manufacture of structural clay products and art pottery. Clays approaching English ball clay in character are found in Nova Scotia, northern Ontario, Saskatchewan, and British Columbia. Those in Nova Scotia and Saskatchewan are partially developed.

Bentonite deposits occur in British Columbia that will compete with the American output as regards quantity and quality. (See also Kaolin.)

### Coal

Production in 1920.....16,624,000 tons, valued at \$77,327,000

Production in 1919.....13,586,000 tons, valued at \$54,052,000

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

Coal in Canada is derived from mines in Nova Scotia, New Brunswick, Saskatchewan, Alberta, British Columbia, and the Yukon. The bulk of exported Canadian coal goes to the United States and Newfoundland. On the other hand, the coal imported into Canada practically all comes from the United States. The exports of coal in 1920 were 2,558,174 tons, and in the same year the imported coal was 18,742,542 tons.

Canada's coal resources compare favourably with other coal mining countries in quantity, quality and mining facilities, but owing to the more important deposits being in the eastern and western portions of the Dominion, coal importations to central Canada have been coming from the United States. This accounts for the excessive importation shown above. There is, however, a large supply of bituminous coal underlying a great part of Alberta. It is possible that some of these deposits could be economically developed in conjunction with the utilization of the by-products, provided that the development is undertaken by a large company with adequate financial assets. In addition to the possible commercial manufacture of lignite briquettes by the process at present being experimentally conducted at Bienfait, Saskatchewan, it seems probable that both lignite and bituminous coal will be developed by the low temperature carbonization method similar to that now in operation at Barnsley in Yorkshire.

### Cobalt

Production in 1918.....137 tons, no sale reported in 1919

Production in 1919.....336,185 pounds, valued at \$840,463

Production in 1920.....593,920 pounds, valued at \$1,484,800

Eighty per cent of the world's supply is obtained from the silver-cobalt-nickel ores of Cobalt. The Canadian refineries produce 350 tons a year, practically all of which is exported to the United States and England. Metallic cobalt is now used for high-speed steel, for plating instead of nickel. Cobalt is mainly used in the form of the oxide as a pigment in the ceramic industry, and for various other purposes.

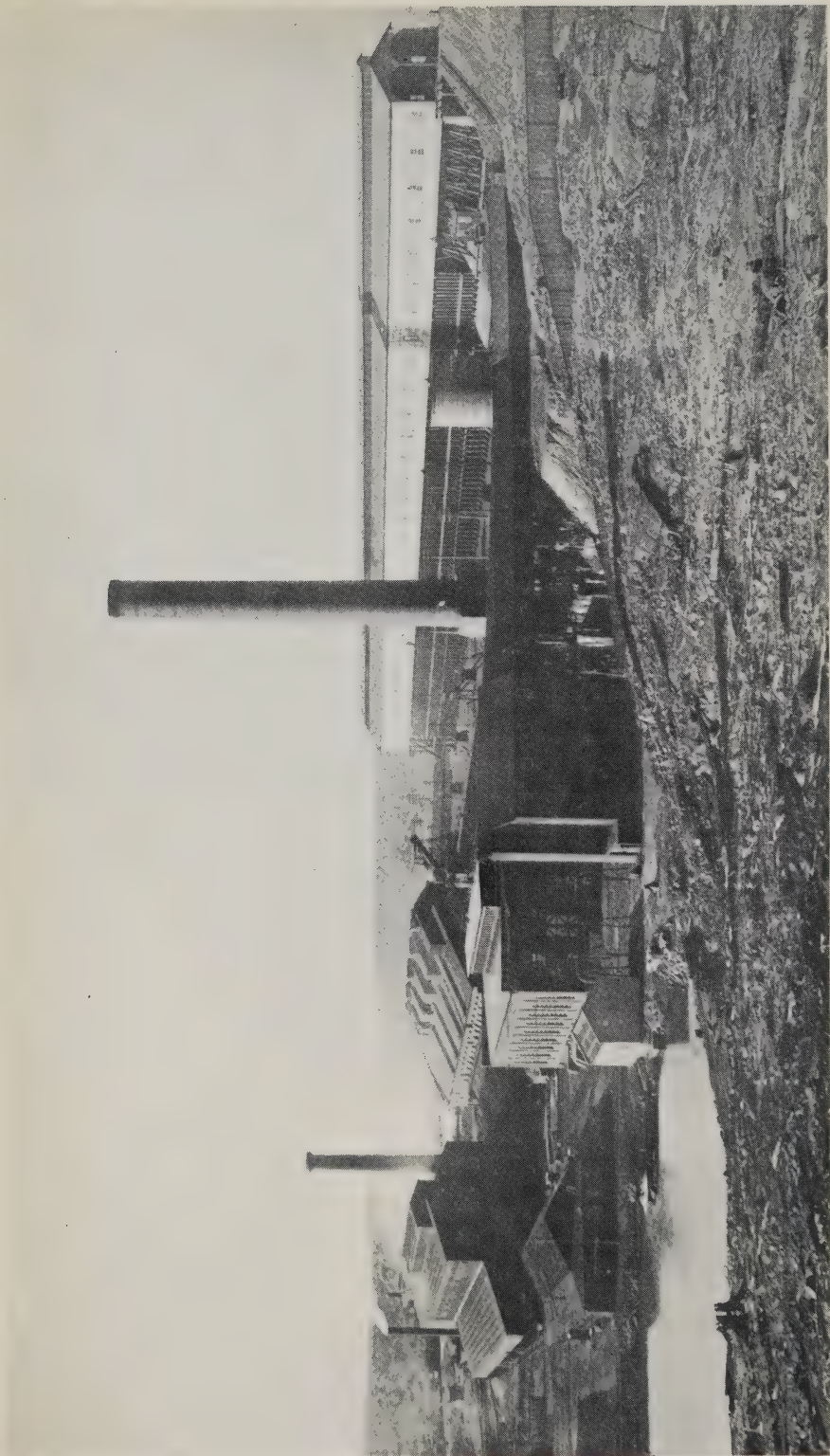
### Copper

Production in 1920..81,155,360 pounds, valued at \$14,166,000

Production in 1919..75,000,581 pounds, valued at \$14,028,000

The chief Canadian sources of copper are in British Columbia and in the nickel-copper area of Sudbury, Ontario. The Mandy mine, which has still available 180,000 tons of 6 per cent copper ore, and the Flin-Flon area, with an estimated undeveloped reserve of over 16,000,000 tons of 1.88 per cent ore, are both in northern Manitoba. Copper is also





COPPER-NICKLE SMELTER, SUDBURY DISTRICT, ONTARIO



## NATURAL RESOURCES IN RELATION TO INDUSTRY

produced in the province of Quebec and the White Horse district of the Yukon. There are several smelters in operation in Canada.

More than half the world's supply, amounting to about 1,000,000 tons, is supplied by the United States. Canada's production amounts to about 40,000 tons, of which approximately 6,000 tons are refined in Canada and the remainder in the United States. About one-half of Canada's production is obtained from British Columbia.

### **Corundum and Artificial Abrasives**

Production in 1918, 137 tons. No production reported in 1919; 195 tons shipped in 1920.

The major portion of the entire supply of corundum is produced in Canada, chiefly in eastern Ontario. About half is exported to the United States, Canada exports over \$2,000,000 worth of artificial abrasives and imports nearly \$1,000,000 of emery and carborundum wheels, and other manufactures such as emery, sand, glass, and flint paper. Many of these goods could no doubt be manufactured in Canada, as there are available large supplies of binding material such as feldspar and fluorspar. United States total exports in 1920 amounted to five and a half million dollars' worth of emery wheels and other abrasives.

### **Chromite**

Production in 1920.....10,500 tons, valued at \$244,984  
Production in 1919..... 8,366 tons, valued at \$224,971

Chromite is chiefly produced in the province of Quebec and to a certain extent in British Columbia.

### **Feldspar**

Production in 1920.....36,856 tons, valued at \$274,075  
Production in 1919.....15,944 tons, valued at \$91,273

An exceptionally pure type of feldspar is found in Quebec, and a small tonnage is exported yearly to the United States and to France for the manufacture of artificial teeth.

Most feldspar, however, is mined in Ontario and the bulk exported to the United States in crude form.

In 1920 Canada imported from the United States and the United Kingdom artificial teeth to the value of \$324,201 and \$9,474 respectively. At the same time 1,350 tons of feldspar (ground) were imported from the

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

United States to the value of \$23,174. The foregoing figures would indicate that there should be a good opportunity for the erection of an up-to-date plant in Canada which could supply the home market and also export ground feldspar instead of the crude material as at present.

Feldspar must be produced, however, as cheaply as possible, and therefore quarrying rather than mining should be used as a means of extraction. In the production of white ware and porcelain, feldspar is added to kaolin, ball clay and flint. Artificial teeth are made by adding 20 per cent of quartz to 80 per cent of feldspar with a little bone ash. Feldspar is also used in a finely ground form in the manufacture of abrasive soaps.

### Fluorspar

Production in 1920.....	11,229 tons, valued at	\$260,446
Production in 1919.....	5,063 tons, valued at	\$ 97,837

The chief sources are in Ontario and British Columbia.

### Gold

Production in 1920.....	766,912 ounces, valued at	\$15,853,478
Production in 1919.....	776,764 ounces, valued at	\$15,580,423

The gold sources of Canada are chiefly northern Ontario, British Columbia, and the Yukon. A great number of gold mines and placer claims are operated. There are two refineries in Canada, one the Royal Mint at Ottawa, and the other at Trail, B.C.

### Graphite, Talc and Manganese

Production in 1920.....	2,227 tons, valued at	\$173,537
Production in 1919.....	1,322 tons, valued at	\$ 92,241

Though Canada's production comes from Ontario and Quebec, there are occurrences of graphite in northern British Columbia, the Northwest Territories and northern Nova Scotia. It is chiefly used in the manufacture of lead pencils, crucibles, lubricants and paints. The greater part of the Canadian production is exported to the United States either in crude form or as manufactured plumbago. At the same time there are imports of both plumbago and its manufactures, some of which are no doubt made from the graphites shipped from Canada. (*See also* Talc; Manganese.)

### Gypsum

Production in 1920.....	429,144 tons, valued at	\$1,876,600
Production in 1919.....	306,947 tons, valued at	\$1,217,350



## NATURAL RESOURCES IN RELATION TO INDUSTRY

Many large deposits of gypsum occur throughout Canada, but the production is chiefly from Windsor, Nova Scotia; Hillsborough, New Brunswick; Paris, Ontario; and Gypsumville, Manitoba. The Hillsborough deposit of gypsum in New Brunswick is of a very high grade. There are also extensive deposits in British Columbia which are being worked by one company only. Nearly 50 per cent of Canada's production is exported in crude form. This material is being used in increasing quantities in the building industry, and it is quite possible that with the revival of this industry the production of gypsum and gypsum products may be greatly increased. There is also an opportunity to increase the export trades especially in the Orient, along the gulf coast of Mexico and in the West Indies.

### Iron

In 1920 the production of pig-iron in Canada was 1,090,318 short tons, of which 75,869 tons were produced from domestic ores. This compares with a production of 917,346 tons in 1919, of which 28,457 tons were produced from domestic ores. Only 20 tons were mined during the first six months of 1921.

The bulk of iron ore used in Canada is obtained from the United States and Newfoundland. Blast furnaces are operated at various points, including Sydney, Hamilton, Port Colborne, Sault Ste. Marie, and Midland. Electric furnaces are also operated in Quebec, Ontario, Manitoba, and British Columbia. British Columbia having large supplies of both hydro-electric power and coal on the seaboard offers opportunities for the development of the iron and steel industries by working the large deposits of iron ore near the Pacific coast. This might be followed by the establishment of industries to manufacture alloy steels. Besides the deposits of iron ore, this province is also rich in ores of manganese, chromium, molybdenum and tungsten as well as being adequately supplied with magnesite and limestone. The development of a steel industry on the Pacific coast should lead to a large export trade with the Western States, the Orient and Australasia.

In 1920 Mr. Nichol Thompson was requested by the Department of Industries of the province of British Columbia, to collect data in respect of the iron and steel industry and to investigate the extent of the local market on the Pacific coast for the products of iron and steel. Particular attention was to be paid to the market for pig-iron with a view to determining the feasibility of establishing a blast-furnace plant for the production of the various grades. In Mr. Thompson's findings, which are printed in

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

the second annual report of the above-mentioned Department of Industries, the following statements occur:—

“There is a market on the Pacific coast for 2,000,000 tons per annum of iron and steel; i.e., this is the aggregate consumption of all grades, including tank, ship, and boiler-plate, merchant bar, tool and mining steel, structural steel, shapes and angles and also light rails. Any one plant capable of turning out all these grades and sections of steel would require tremendous capital outlay in rolls and other equipment. If blast-furnaces were established here and supply of the various grades of pig-iron assured at reasonable price, subsidiary companies would undertake the manufacture of the different grades and sections of steel to suit the market.

“There is, beyond a doubt, a local or domestic market on the Pacific coast, from Los Angeles to British Columbia, for foundry pig-iron alone of at least 1,000 tons per day; and if produced at anywhere near the cost of steel scrap—\$27 to \$30 per ton—I think I can safely say there is a market for 2,000 tons per day. There are five scrap-mills in California, at San Francisco and Los Angeles, with monthly output of 27,000 tons, and one in Washington, at Seattle, with present output of 4,000 tons per month. These mills, turning out over 1,000 tons per day of merchant bar from steel scrap, would use at least 40 per cent pig-iron if they could get it; in fact certain officials of United States steel industries inform me that they would undertake, on behalf of the five California mills, to contract for 500 tons of pig-iron a day. The cast-iron foundries in Washington, Oregon, California, and British Columbia would easily consume 1,000 tons per day. Undoubtedly the time is opportune and there is every inducement for capital, properly organized and managed, to get in on the ground floor with the nucleus of this basic industry.

“In addition to the local market, there is an export market looming large in the future development of the Orient, Australasia, and isles of the Pacific, and the west coast of Mexico and South America. The present export through British Columbia ports is now practically nil, because of the fact that Canada does not manufacture nearly sufficient for domestic requirements and at present is a large importer of iron and steel. There is, however, a very different story to tell regarding the exports through the ports of Seattle, Tacoma, Portland, San Francisco, and Los Angeles; though even here it is somewhat difficult to obtain the correct data, as many of the items are not listed by weights but rather by value, or perhaps

## NATURAL RESOURCES IN RELATION TO INDUSTRY

by number and value. In point of value this export trade through United States Pacific ports in 1918 amounted to approximately \$100,000,000. The tonnage of pig-iron, steel billets, ingots, blooms, rails, and structural iron and steel in the same year totalled 1,000,000 tons and \$68,000,000 of the total valuation of exports, the balance consisting of machinery or iron and steel. It is interesting to note in this connection that for the ten months ending April 30, 1920, approximately \$14,000,000 in steel rails was shipped to Pacific ocean countries, and that this item represented 60 per cent of the total United States exports in this commodity. These rails were mostly smaller and medium sizes, the percentage above 60 pounds being almost negligible."

### **Kaolin (China Clay)**

The production of China clay in Canada is very limited. The only deposit that is being worked at present is in Quebec, near the Ottawa river. There are other deposits in Ontario which are of less value on account of being discoloured, due largely to the presence of iron oxide.

Most of the kaolin used in Canada is imported from Cornwall and the United States.

### **Lead**

Production 1920 . . 33,985,974 pounds, valued at \$3,038,346

Production 1919 . . 43,827,699 pounds, valued at \$3,053,037

The main sources of lead in Canada are in British Columbia, where it is recovered from silver-lead-zinc ore. Quebec and Ontario also produce a small percentage of the total. A considerable amount of lead is imported in the form of scrap, block and sheets from the United States. A large part of the Canadian produce is exported in the form of ore concentrates and pig, chiefly to the United Kingdom and the United States.

### **Magnesite**

Production in 1920 . . . 18,378 tons, valued at \$512,756

Production in 1919 . . . 11,073 tons, valued at \$328,465

The large deposits in Quebec constitute the present source of Canada's supply. Although Canada produces over 18,000 tons of this material, most of which is exported to the United States, magnesite firebricks and stucco products are imported to the value of nearly \$200,000. It is possible that these could be manufactured in Canada. Caustic magnesia low in lime can be produced from the high lime magnesites together with the by-product, dolomite lime paste, which is used for structural purposes and in the manufacture of sulphite pulp. The hydro-magnesite deposit at Atlin, B.C., is of such a nature as to make it suitable for the manufacture of magnesia for chemical and pharmaceutical purposes.



## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

### **Manganese**

Manganese is found in the Maritime Provinces, but is not produced except in limited quantities. An occurrence of manganese in British Columbia has been developed considerably. A more recent discovery on Vancouver island is at present claiming attention. The most important factor to consider in regard to this production is that of electrical power to operate the blast-furnaces. It is very probable that the development of British Columbia power will permit this industry being undertaken in the near future. (*See also* Graphite; Talc.)

### **Mica**

Production in 1920 . . . 2,150 tons, valued at \$368,000

Production in 1919 . . . to the value of \$273,305 is reported.

The chief sources of mica are in eastern Ontario and Quebec. Canada possesses the best mica in the world for the use of electrical appliances.

### **Molybdenum**

Excellent facilities for cheap water-power development enable Canada to produce ferro-molybdenum at a cost which is probably lower than that in any existing European plant. In 1917 Canada became the world's largest producer of molybdenum. Though there is no production at the present time, there are important molybdenite deposits in Ontario, Quebec, British Columbia, and to a limited extent in Nova Scotia. During the war the ore was concentrated in Canadian mills and marketed either as concentrates, molybdic acid, ammonium molybdate or as ferro-molybdenum. The great experience gained by England, France and Italy in the treatment of molybdenum ores and in the creation of certain alloys containing this metal, may provide in the future a limited but steady demand for this product. The use of molybdenum in tool-steel, automobile construction, electric ranges and scientific instruments has increased greatly during the last few years.

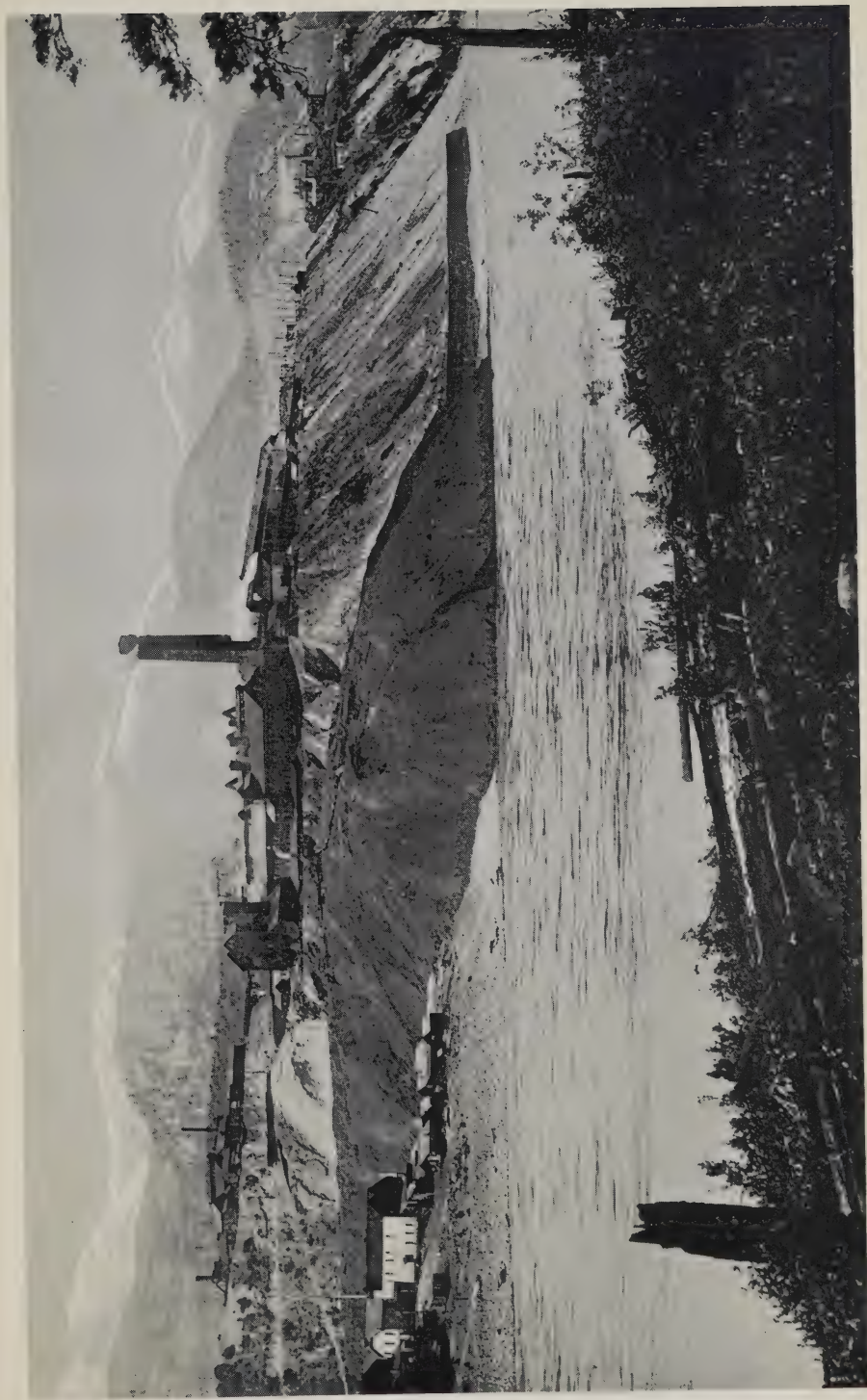
### **Nickel**

Production in 1920 . . 61,136,000 pounds valued at \$24,500,000

Production in 1919 . . 44,545,000 pounds, valued at \$17,818,000

The nickel production of Canada comes mainly from the nickel-copper ore of the Sudbury district in Ontario, but there is also some production in the Cobalt district. About 80 per cent of the world's supply is obtained from these sources, and occurrences have been noted in Manitoba which have yet to be developed. Some of the nickel ore is refined in Canada, but the greater part is shipped to refineries in South Wales and the United States. Nearly one-half million dollars' worth of nickel goods, manufactured and partly manufactured, are imported from the United





SMELTER AT TRAIL, B.C.



## NATURAL RESOURCES IN RELATION TO INDUSTRY

States. "Monel metal," an alloy of copper and nickel, is produced from the matte without refining, and is largely used in the non-ferrous alloy industry.

### Natural Gas

Production in 1920, 6,961,284 M cubic feet, valued at \$4,225,887

Natural gas occurs in southern Ontario and at Moncton, New Brunswick, but the most productive areas are in the Medicine Hat and Bow Island fields of southern Alberta.

### Oil Shales and Petroleum

Oil shales exist in New Brunswick, Nova Scotia, northern Saskatchewan, northern Manitoba, northern Ontario, and British Columbia. Alberta shales from New Brunswick, as tested in Scotland, average 30 gallons of oil and 60 pounds of sulphate of ammonia per ton. The Scottish shales average 15 gallons and 20 to 60 pounds of ammonium sulphate. Shales from Indian mountain, New Brunswick, analyse 48.26 gallons per ton and 32 pounds ammonium sulphate. At a mean cost of about \$5,000,000, exclusive of tramways and crushing plant, a commercial undertaking should produce 1,000 barrels per day, finding a market in the ever-increasing demand for fuel oil and the by-products of crude oil.

The production of petroleum in 1920 was 196,937 barrels, valued at \$821,545, and in 1919, 240,970 barrels, valued at \$744,677. About 90 per cent of this production is obtained from the oil-fields of southern Ontario, but a small annual production is obtained from New Brunswick and Alberta. Favourable indications have been found in the Mackenzie district of the Northwest Territories, especially at Norman, largely as the result of the work of the Imperial Oil Company.

It is probable that Canada will in the comparatively near future become a valuable contributor to the world's oil supply.

### Pyrites

Production in 1920—174,744 tons, valued at \$522,704, chiefly from Ontario and Quebec. Natural sulphur is not known to occur in Canada in commercial quantities. Pyrites has been found in many localities, but is mined only at a few points. The recent expansion of Canada's chemical industry and the requirements of large sulphite pulp mills should create a domestic demand, though at the present time Canada imports large quantities of sulphur from the Southern States.

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

### Salt

Production in 1920 . . . 210, 211 tons, valued at \$1,547,879

Production in 1919 . . . 148,302 tons, valued at \$1,398,968

Practically the whole of the production comes from Windsor, Ontario, but the Malagash deposits in Nova Scotia are claiming much attention. The total production does not meet the domestic demand.

### Silver

Production in 1920 . . 13,000,000 ounces, valued at \$12,908,000

Production in 1919 . . 16,000,000 ounces, valued at \$17,802,000

The most important source is Ontario. Refined silver is obtained from reduction plants near Cobalt and from smelters near Welland. Silver is also produced in British Columbia and Quebec. The recently discovered silver area at Keno Hill, in the Yukon Territory, is considered important.

### Talc

Production in 1919 amounted to about 18,000 tons, valued at \$116,000. The majority is exported for use in paper-making, and in talcum powder and other toilet preparations. Practically all the supply comes from Hastings county, Ontario.

### Zinc

Production in 1920 . . 40,166,200 pounds, valued at \$3,081,149

Production in 1919 . . 32,194,757 pounds, valued at \$2,362,448

The main source of zinc is from the lead-zinc ores of British Columbia and a small amount from Portneuf county, in Quebec. A percentage of the total production is exported to the United States, chiefly in the form of zinc ore concentrates. Practically all the zinc metal and manufactures imported into Canada come from the United States, and it is probable that the industrial use of zinc might be considerably increased.

## §2. FOREST PRODUCTS

### Timber and Pulpwood

As regards standing timber Canada may be broadly classified into five divisions: (1) The Barren Lands of the north. (2) The semi-treeless lands immediately south of the Barren Lands. (3) The inland lakes and the area above the timber line. (4) The prairie lands, i.e., the southern part of the middle west provinces. (5) The forest area proper. The original timbered area was approximately 1,900,000 square miles. This, how-



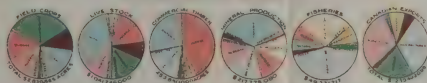
# MAP OF THE DOMINION OF CANADA INDICATING MAIN NATURAL RESOURCES & RAILWAY LINES

Scale of Miles

Prepared in the  
Natural Resources Intelligence Branch  
in co-operation with  
the Commercial Intelligence Service  
Department of Trade and Commerce  
1921



COMPARATIVE DIAGRAMS





## NATURAL RESOURCES IN RELATION TO INDUSTRY

ever, has been considerably decreased by cutting and by forest fires. The statistics of the lumber industry for 1919 are as follows:—

Number of plants.....	3,410
Total capital invested.....	\$231,203,247
Number of employees, about.....	75,000
Total value of mill and wood production..	\$222,648,790

The yearly value for production in 1919, in Quebec, Ontario, and British Columbia was in the neighbourhood of \$60,000,000, in each case. The balance was produced chiefly in northern New Brunswick and Nova Scotia. In the production of sawn lumber, of the softwoods spruce provides the largest cut, to the value of approximately \$44,000,000; Douglas fir and white pine rank next, to the value of \$22,407,922 and \$19,872,271 respectively. The most important hardwoods produced are birch, valued at \$2,700,000, and maple, valued at \$1,600,000.

The chief customers of Canada as regards pulp and paper are Australia, Japan, New Zealand, South America, and, of course, the United States. Dwindling resources in the last-named country force her to look to Canada for much of her supply, not only of pulp and paper, but also of lumber, lath, shingles and square timber. For this reason a great part of the pulp and paper industry is in United States hands and developed by United States capital.

The pulp and paper industry is becoming one of the most important in the Dominion, and with one or two exceptions more capital is invested in it than in any other industry. There remain, however, further opportunities for development. For example, Manitoba, and the immense areas of jack pine and spruce in Northern Ontario, offer possibilities worthy of consideration, particularly if developed in conjunction with the chemical and metallurgical industries. Cheap water-power is becoming available, large supplies of pulpwood are to be found on both sides of the principal waterways, and there is no reason why a wood-working and turning industry—a field by no means adequately covered at present—should not be carried on at the same time.

British Columbia's vast resources of Douglas fir can be developed to a far greater extent than at present, most particularly along the lines of creosoted railway ties and paving blocks. The extraction of tannic acid from the bark of the western hemlock is also under investigation commercially.

In the paper business there is an opportunity to manufacture and market high-grade rag-content drafting and drawing paper and hand-made papers for book stock.



## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

### Industrial Alcohol

Another industry as yet in its infancy in Canada is that of wood distillation, the most important products being crude wood alcohol, acetate of lime, charcoal, tar and creosote oils.

The *Journal of the Society of Chemical Industry*, in quoting an article of the American Chemical Society, states:—

“The decreased production of industrial alcohol in the United States resulting from the enforcement of the Volstead Prohibition Act is proving a serious handicap if not a menace to industry. Whereas the production of industrial alcohol was 110 million gallons in 1917, the output had declined to 56 million gallons in 1920, and a recent survey showed that 53 per cent of the industrial alcohol plants have been closed down or scrapped. In fact the situation has become so serious that manufacturers of celluloid are contemplating the transfer of their factories to Canada, where there are fewer restrictions on the use of alcohol for industrial purposes.”

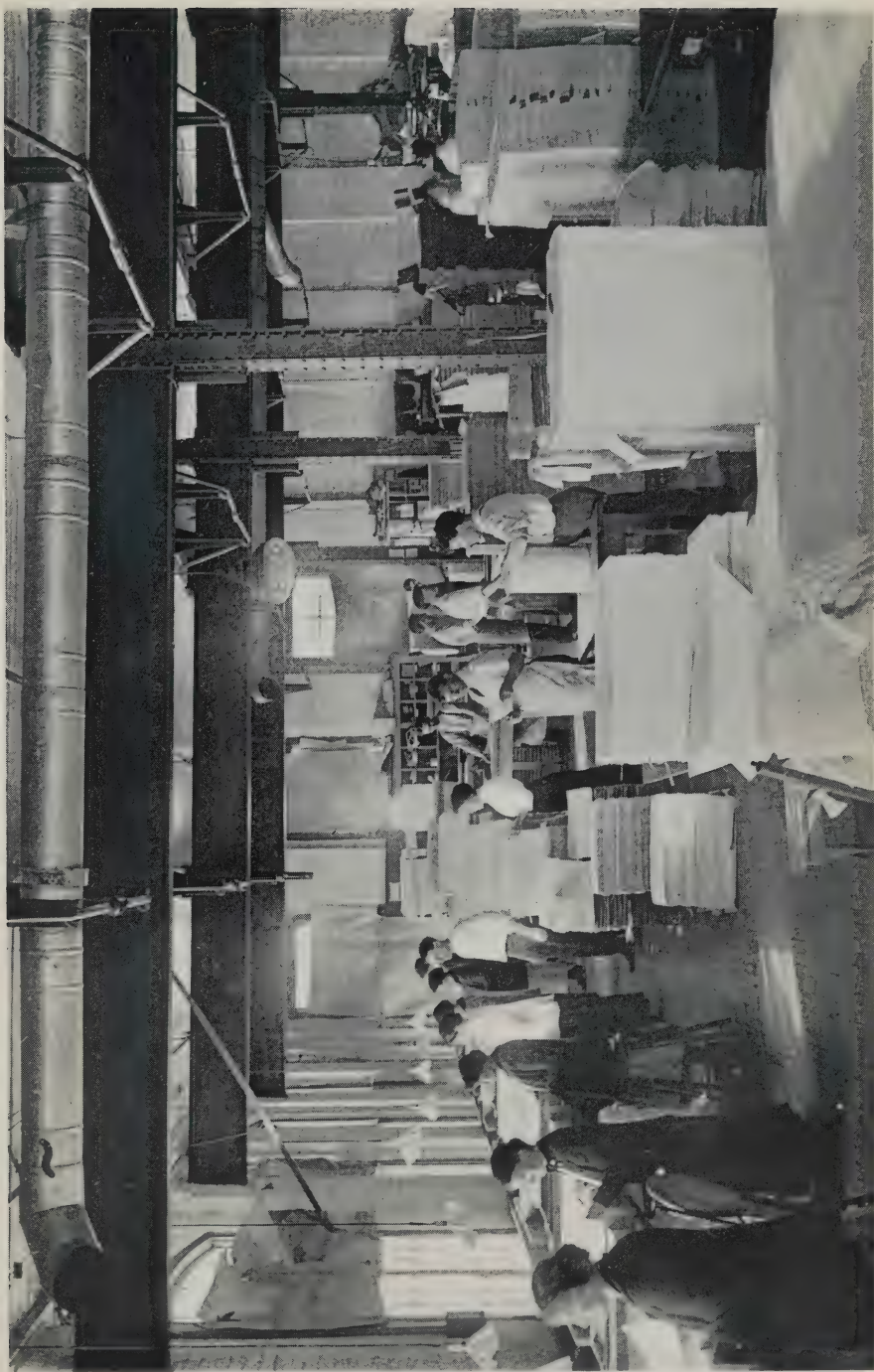
This appears to suggest a field for increased activity along these lines in Canada. To quote the *Canadian Forestry Magazine* for January, 1921: “There are thirteen factories in Canada engaged in the distillation of wood alcohol. These produce 13,000 tons of gray acetate of lime, 60,000 tons of charcoal and 1,000,000 gallons of methyl alcohol.” A comparison of the above figures with those quoted as obtaining in the United States, namely, 110,000,000 gallons in 1917 and 56,000,000 gallons in 1920, would suggest that a considerable expansion in this industry is warranted by the present and prospective market.

A certain amount of industrial alcohol is, however, produced from other sources, but the total output is said to be only 8,000,000 gallons.

### Resin and Turpentine

In the United States the production of resin and turpentine is effected by scarifying the long-leaved pines of the Southern States and collecting the gummy exudation. This latter is then distilled, the distillate being turpentine and the residue resin. Turpentine and resin may also be obtained by various methods of distillation of the wood containing them. The most important methods are the so-called steam process and destructive distillation. By the steam process the products secured are turpentine and pine oil; by destructive distillation, turpentine, tar, pine oil and pitch, leaving a considerable amount of marketable charcoal. A third method of extracting resin from resinous wood is by means of hot petrol as a solvent. In practice a combination of all methods is generally used.





INTERIOR OF QUEBEC PAPER MILL



## NATURAL RESOURCES IN RELATION TO INDUSTRY

The situation as regards North American production of resin and turpentine is as follows:—

RESIN	
Exports of United States (1921)	Exports of Canada (1921)
To United Kingdom.....	\$3,330,045
To Canada.....	990,006
To Australia.....	481,020
	Nil
TURPENTINE	
Exports of United States (1921)	Exports of Canada (1921)
To United Kingdom.....	\$6,697,807
To Canada.....	913,654
To British Oceania.....	1,045,963
	Nil

The United States produces approximately 75 per cent of the total world supply; France contributes about 15 per cent, and the remaining 10 per cent is from Spain, Greece, Portugal, and India.

The following statement from *Forest Products, Their Manufacture and Uses*, by Nelson Courtlandt Brown, is illuminating:

“In the United States there has been a great decrease in the production of turpentine and resin during recent years. There was a severe drop in production from 1917 to 1918. The industry is on the wane due to the rapid exhaustion of the valuable timber supplies of the south.”

On the other hand, the *Journal of the Royal Society of Arts* in its issue of May 20, 1921, in reporting an interview with E. S. Oliver, an industrial chemist and specialist in wood products, who has been making a special study of the possibilities of development in the industry in British Columbia, states:—

“The greatest potential source of turpentine and resin chemicals lies in British Columbia.”

Provincial legislation has lately been enacted in British Columbia authorizing the issue of “resin leases,” as it has been proved that resin may be tapped without in any way affecting the growth of the tree. It is estimated that a block of about 100 acres of Douglas fir gives about 800 barrels of pitch per year and about 40,000 gallons of sap. One gallon of sap produces about one-third of a gallon of high-grade turpentine, while the residue is largely resin with some other valuable products.

In view of the enormous resources of Douglas fir in British Columbia, there should be an extensive field for a new Canadian industry along these lines, not only by securing “resin leases” but also by utilizing the present waste wood of the lumber industry.

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

### §3. THE CHEMICAL INDUSTRY

The unprecedented demand for explosives and other munitions of war which are the products of chemical change, together with the decreased imports of chemical products from European countries, built up in Canada during the five years of war a number of large chemical industries. But the growth of the industry had begun before the war. In 1912 the export of all classes of chemicals for the fiscal year was \$2,974,575; in 1919 it was \$56,799,799, but in 1921 it had fallen to \$19,582,051. In the same period, 1912-1921, imports grew from \$13,930,927 to \$36,334,612.

Chemical products form the basis of many important industries. The efficiency and adaptability of electric energy for the refining of metals in the manufacture of chemical products, has long been recognised. Electric refining, at first applied to copper only, is now being extended to all the metals, and the electric current is also employed in their extraction from the ores. The production of aluminium, of calcium carbide, of the abrasives, of new refractory materials, and of graphite, has already created large industries. The fixation of nitrogen with its many subsidiary industries, such as the manufacture of nitric acid, ammonium nitrate, explosives, etc.; the reduction of magnesium and the production of innumerable chemical compounds, known at present only to the special trades requiring them, are now under commercial development. Owing to Canada's great water-power resources, and in particular to the fact that many of these are situated near tide-water, there is unrivalled opportunity in the country for the expansion and the establishment of new chemical industries. Canada is, indeed, favourably situated to secure the principal electro-chemical and electro-metallurgical industries of eastern North America. Such as are already established are chiefly manufactures of aluminium, acetone, calcium carbide, metallic magnesium, calcium cyanamide, phosphorus, ferro-silicon and the refining of copper, zinc, cobalt and nickel.\*

Although prior to the war the United Kingdom imported chemical products to the value of £4,650,000, Canada supplied but £40,000 worth. For the reasons mentioned above, Canada should undoubtedly secure a large share of this trade.

### §4. FUR FARMING

Fur farming on a commercial basis was originated in Prince Edward Island in 1887. In 1914 in this island alone there were over 250 fox ranches containing 4,887 foxes, of which 1,602 were silver. When this industry was found to be so profitable, the inevitable speculation set in. At the outbreak of war in 1914 five-months-old silver fox pups of the best Prince

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\* The proposed manufacture of acid phosphate in the chemical plant at Trenton-on-lake, Ontario, should turn attention to development of domestic deposits of apatite and ultimately make Canada independent of importations from Florida.



## NATURAL RESOURCES IN RELATION TO INDUSTRY

Edward Island stock were sold at from \$12,000 to \$16,000 per pair. In April, 1917, the prices had fallen to as low as \$1,500 per pair. The speculators have undoubtedly done much to discredit the industry, but it is now an established fact that good fur-bearing animals such as the fox, beaver, mink, lynx and muskrat can be successfully bred in captivity. In this Canada possesses an industry which, if developed scientifically and on sound and legitimate lines, is capable of enormous expansion.

In 1918 there were between five and six hundred grade Karakuls in Canada, produced by crossing Karakul rams with our native long-wool grades of sheep; and approximately one hundred rams and ewes either imported or descended from imported stock. The Karakul industry in Canada is as yet in the experimental stage, but from the results already obtained in the production of commercial fur, there seems to be no good reason why Persian lamb and other classes of fur, the product of Karakul sheep, cannot be produced in the Dominion.

### §5. FISHING AND FISH-CANNING INDUSTRIES

Production in 1920.....\$49,321,000.

Of this British Columbia contributed \$22,000,000 and Nova Scotia \$13,000,000. About half the production was exported. The major industries concerned with fish and fish products are the salmon canneries of British Columbia and the lobster canneries of the Atlantic coast, particularly Nova Scotia. Oysters are found on both coasts, as are codfish, haddock, and herring. These latter are marketed smoked, dry, salted and fresh. Fresh water fishing is an industry of some importance in the Great Lakes.

The main opportunities for expansion in the fish industry seem to lie in the export of salted pickled herring. The utilization of fish waste in the form of fish-meal as a foodstuff for live stock, also might be carried very much further. Canada is at present importing the bulk of the animal oil used in the country, much of which could be very well manufactured from fish waste. Interesting experiments have already been made and a successful business is being conducted in utilizing fish offal in the manufacture of fertilizer, for which there is a large domestic demand.

The possibility of developing the shark industry on the north Pacific coast is at present attracting much attention. There appears to be an unlimited number of sharks in these waters from Vancouver north to Alaska, and a recent weekly catch reported by one company operating is eighty sharks, aggregating about 100 tons in weight. The main product is

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

leather from the hides, which is of excellent quality and varying degrees of thickness and texture dependent upon the age of the shark. Glue is extracted from the head and bones; fish-meal from the body; and excellent oil and glycerine from the shark livers. There seems little reason why a shark industry in British Columbia should not be developed to the point already reached in Scandinavia.

Another untapped source of wealth is the exploitation, along similar lines, of the porpoise of the Lower St. Lawrence.

### §6. AGRICULTURE

Canada has taken a high standing amongst agricultural countries in a comparatively short period. The remarkable initiative of the farmers who have recently settled in the western Prairie Provinces has to a large extent been responsible for the greatly increased acreage now under cultivation. In 1910 only 11,000,000 acres were being cultivated, but in 1921 the number of acres had increased to 52,328,260. The Dominion has an estimated land area of 2,306,502,400 acres, of which 301,700,000 are suitable for farming. At the present time, however, only one-sixth of this total is being cultivated, one-half of which consists of farm holdings. There are therefore 250,000,000 acres awaiting cultivation. It is of interest that out of the 178,000,000 acres of arable land in the Prairie Provinces, just over 31,750,000 acres are under cultivation, so that there are still great opportunities for those wishing to become Canadian farmers.

Since the armistice Canada has placed over 25,000 ex-service men on the land and has advanced over \$80,000,000 in loans to start them properly as farmers. As an illustration of the success of this land settlement, the result obtained on the Poorman's reserve near Regina can be cited. At the time the land was taken up it was practically uncultivated, but this year 1,152 acres have been broken by twenty-seven soldier settlers. The estimated crop-value of the fifteen of these who are now on their second season amounts to \$27,000 or \$1,780 per man. Further, the remarkable progress made has increased the value of the property from the average price of \$11.25 per acre as paid by the settler to \$25, which means an increase in land value to each of these new farmers, of approximately \$13.75 per acre.

There are very few tenant farmers in Canada, for it is essentially a land of farm owners. Today vast tracts of virgin agricultural land of proven fertility await settlement, and what is of greatest importance is the fact that farms can be bought at a price which is about equal to the rental payable in many other countries. In some cases the first crop has proved sufficient to pay the whole purchase price.

## NATURAL RESOURCES IN RELATION TO INDUSTRY

### Field Crops

1920 acreage, 52,830,865; value of production, \$1,455,244,050

1919 acreage, 53,049,640; value of production, \$1,452,437,500

Canada grows one-fourth as much wheat as the United States, which has a population thirteen times larger. To take care of this huge crop there are over 600 Canadian flour mills with an annual capacity of 35,000,000 barrels and 3,855 grain elevators with a total capacity of 231,213,620 bushels. These include the large combination elevator at Port Arthur, which has a capacity of nearly 10,000,000 bushels.

In 1920 the flaxseed area was 1,428,164 acres, of which 1,391,076 were in Manitoba, Saskatchewan and Alberta, the variety grown being used for the manufacture of oil. A new Canadian industry is rapidly springing up as a result of the successful growth of fibre flax in Ontario, and large areas in Quebec, Manitoba and British Columbia have been pronounced suitable for this type of flax. A company has been established for some time at Guelph where it grows its own flax, converts it into fibre and manufactures excellent tablecloths, towels and other linen products. Indications are that, even assuming a considerable decrease in the present selling price, a good return on the capital invested in this industry would still be realized, and that improved methods will decrease the cost of production and thus make the flax industry of great importance to the Dominion.

The production of tobacco in 1920 was valued at \$13,106,550 and was produced on 53,114 acres. Tobacco is successfully grown near the shores of lake Erie, along the St. Lawrence and in the counties near Montreal, and also in the Okanagan valley in British Columbia. It has also been shown recently that both tobacco and tea can be grown successfully in some of the southern valleys of Vancouver island.

The production of hemp, which was commenced last year, and the cultivation of the sugar beet, could be greatly increased.

### Live Stock

*Estimated Number and Value of Farm Live Stock.*

	1919		1920	
	Number	Value	Number	Value
		\$		\$
Horses.....	3,667,369	435,070,000	3,400,352	361,328,000
Milch cows.....	3,548,437	708,821,000	3,530,238	561,500,000
Other cattle.....	6,536,672		5,947,142	
Sheep.....	3,421,958	50,402,000	3,720,783	37,263,000
Swine.....	4,040,070	102,309,000	3,516,678	81,155,000



## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

Next to field crops, the live stock industry is the most important branch of Canadian agriculture. The gross value of the farm animals raised in 1920 amounted to \$140,083,000, against approximately \$80,000,000 in 1915. The estimated value of farm live stock in Canada in 1920 was \$1,041,246,000, while in 1915 it was only \$373,381,000. The development of community breeding of hogs of the bacon type will do much to help Canada maintain and probably increase her volume of trade in this part of the industry, which in addition to home consumption amounted in 1920 to \$34,000,000. Canadian bacon is of considerable financial value to the Dominion and is one of the chief sources of farm revenue. There is no reason why the premier place among the bacon exporting countries of the world should not be secured.

Sheep-raising has become an important industry in New Brunswick, and it has been found that the climate and natural conditions of Nova Scotia are conducive to the successful raising of sheep. The sheepmen in the Prairie Provinces have produced wool the equal of similar classes and grades grown elsewhere in the world. In 1920 shipments were made to England, which may become a market for that portion of the yearly clip not required for the Canadian woollen mills.

As Canada's population grows her livestock industry must necessarily increase. This will mean more meat-packing plants. At the present time Canada's meat-packing industry is not unimportant and the total value of products amounts to about \$234,000,000 yearly. Great strides have been made in its development in Western Canada, although Ontario still retains the leadership by a wide margin. The total capital invested is rather more than \$93,000,000.

### Dairying

Production, 1919.....	\$252,320,000
Production, 1920.....	\$247,531,352

Dairying is one of the latest, and to-day one of the most important, agricultural industries of Canada. The increase is largely due to the introduction of the factory system of the making of cheese and butter, and to improved methods of cold storage. The exports of cheese and butter for the twelve months ending March 31, 1921, amounted to 126,395,777 pounds of cheese valued at \$36,336,863, and 17,612,605 pounds of butter valued at \$9,844,359.

Within recent years there has been a large increase in the production of condensed milk, and in some parts of the country the farmers have found it more profitable to send their milk to the condenseries than to the cheese factories. The first milk-condensing plant was established at





SPRAYING ORCHARDS, BEAR RIVER, N.S.



## NATURAL RESOURCES IN RELATION TO INDUSTRY

Truro, N.S., in 1883, and since then twenty-four plants have been erected in Canada for the manufacture of condensed, evaporated and sterilized milk and milk powder. The value of these products has increased from \$269,520 in 1900 to over \$13,000,000 in 1920. As Canada is now able to compete with Danish farmers in exporting butter to the United Kingdom, this branch of agriculture should readily increase and lead to the adoption of mixed farming in the Dominion to a far greater extent than at present.

### Fruit and Vegetables

1919 value of production.....	\$40,000,000
1920 value of production.....	\$40,000,000

Very important fruit districts in Canada are the Annapolis valley in Nova Scotia, the Niagara peninsula in Ontario, and the Okanagan and other valleys in British Columbia. Strawberries and raspberries are specialties grown in the southern part of Vancouver island, and all of the fruit that is not crated is made into jam at factories established in the province. At present there are about 350 fruit and vegetable canneries and 150 apple evaporators in the Dominion. The dehydration of fruit and vegetables is still in its infancy in Canada and this industry should be capable of further development. The adoption of certain standards of quality and packing, and a careful inspection system instituted by the Department of Agriculture, is doing much to improve and safeguard this industry.





### CHAPTER III

#### CANADIAN TRADE, PAST AND PRESENT

From Confederation to 1896 the trade of Canada made no striking advance. There had been fluctuations, but all of a more or less minor character. No great growth had taken place, and for thirty years the curves of import and export showed little inclination to climb from what had become an almost fixed level. Then came Canada's hour.

Immigration suddenly increased. Propaganda and advertisement in the overpopulated Old World gave reality to what had hitherto been something of a legend—dreamt about, discussed, but not understood—the existence of vast areas of fertile land in Western Canada free to whoever would turn the sod. From every part of Europe thousands flocked to this new land of promise. Gold was found in paying quantities in the Yukon, and the "trail of '98" began. Coal and iron mining took on a new activity; railway mileage increased; and the stir of industry animated the whole Dominion. As industry grew and the resources of the country were increasingly exploited, the call went forth again for men and yet more men.

Both men and money were to be had in plenty. Immigrants by the thousand came from the United Kingdom, Scandinavia and Southern Europe. Settlers crossed the line from the United States, seeking the free land which the West had to offer. The Canadian Government, the Provincial Governments and the Canadian Pacific Railway put forth many inducements in the nature of low transportation and financial assistance. The population continued to increase rapidly, not only in the agricultural areas, but also in the towns and cities, and with it production increased. Great Britain, France and Germany furnished capital by the purchase of Government, municipal, railway and industrial bonds and securities. The United States, not slow to realize the advantage of a foothold on British soil, assisted by establishing branch factories in Ontario and Quebec. The fishing and canning industries of the Maritime Provinces and British Columbia found new capital within the Dominion and in the United States. Tariff concessions were, in 1910, extended to France, Belgium, the Netherlands, and Italy. In consequence of these tariff concessions, Argentina, Colombia, Denmark, Japan, Norway, Russia, Spain, Sweden, Switzerland, and Venezuela, being entitled to most-favoured-nation treatment, were also given whatever tariff favours had been extended to the former countries. British Preference, in one form or another, had long been in existence.

Abounding prosperity and higher prices were reflected in the trade returns. In 1895 the total value of imports and exports was about \$255,000,000; by 1903 it had doubled; by 1910 it had tripled; by 1912

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

it had quadrupled; but even in 1912 agricultural products formed the bulk of Canadian trade. Grain figures were increasing with amazing rapidity, and the produce of mines and fisheries, live stock and wood products played no small part. But manufactures, while still of lesser importance, with the exception of such as were directly concerned with the first working of raw material, were in healthy adolescence. Great Britain remained Canada's best customer; imports from the United States still exceeded those from all other countries.

The day of the manufacturer had dawned, and in 1912 the future of Canadian industry was looming large. The growth of the domestic market demanded the expansion of domestic manufactures, but this expansion went further and made itself felt in greatly increased export. The era of large business had begun and merger succeeded merger, with resultant increase in production. Industrial capital increased rapidly; from \$455,000,000 in 1900 it rose to \$1,247,000,000 in 1910; to nearly \$2,000,000,000 in 1915; and to \$2,787,000,000 in 1917. The number of employees showed a corresponding increase, and the value of manufactured products increased from 1900 to 1915 about 300 per cent. The following table gives some idea of this expansion.

### STATISTICS OF MANUFACTURES FROM 1900 TO 1915

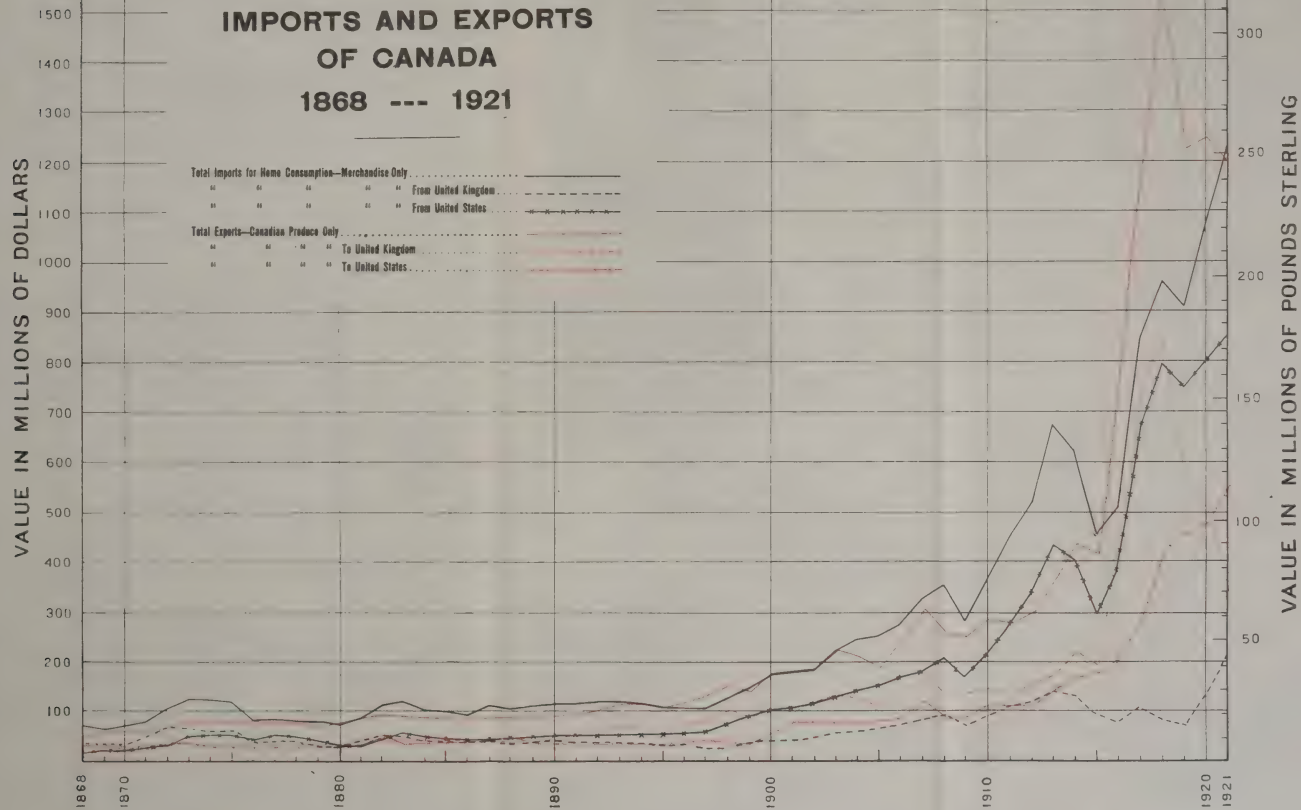
(Establishments employing 5 hands or over)

c.

Date	Firms	Capital	Employees	Salaries	Cost of Material	Value of Product
		\$		\$	\$	\$
1900....	14,650	446,916,487	339,173	113,249,350	266,587,858	481,053,375
1905....	12,547	833,916,155	383,920	162,155,578	.....	706,446,578
1910....	19,218	1,247,583,609	575,200	241,008,416	601,509,018	1,165,975,639
1915....	15,593	1,958,705,230	.....	283,311,505	791,943,433	1,381,547,225

The figures for the above table are not available after 1915, but the following table gives some idea of the increase from 1915 to 1917—all establishments irrespective of hands employed:—

	1915	1917	Increase	
			Amount	Percentage
Establishments.....	21,306	34,392	13,086	61.42
Capital.....	\$1,994,103,272	\$2,786,649,727	\$ 782,046,455	39.74
Salaries.....	\$ 60,308,293	\$ 94,992,246	\$ 34,683,953	57.51
Wages.....	\$ 225,580,998	\$ 455,199,823	\$ 229,618,825	101.79
Cost of material.....	\$ 802,135,862	\$1,605,730,640	\$ 803,594,778	100.18
Value added in manufacture	\$ 605,001,278	\$1,409,847,300	\$ 804,846,022	133.03
Value of product.....	\$1,407,137,140	\$3,015,577,940	\$1,608,440,800	114.31







## CANADIAN TRADE, PAST AND PRESENT

Almost any specific industry may be taken to exemplify this remarkable growth, for it was a wellnigh universal expansion, in no way limited to one type or class of commodity. The record of the rubber industry will serve the purpose.

In 1910 the production of rubber goods in Canada approximated \$5,000,000. Since that date the history of the industry in the Dominion is one of steady, consistent and rapid expansion, which was lessened only by the recent world-wide depression. According to figures published at the Annual Convention of the Rubber Association of Canada, held in Montreal in 1921, the sales of Canadian-made motor and cycle tires increased from about \$1,000,000 in 1910 to \$31,000,000 in 1919. In the same period the sales of mechanical rubber goods increased from \$1,700,000 to \$6,000,000, and footwear from \$1,800,000 to \$17,000,000. In brief, the rubber industry expanded in less than a decade from \$4,600,000 to rather more than \$56,000,000, and the export business from \$113,000 to \$8,000,000. Figures published by the Dominion Bureau of Statistics in relation to this industry show that the number of employees increased from 1909 to 1919 nearly 900 per cent, or from 1,500 to 13,000; capital invested increased over 1,600 per cent, or from \$4,500,000 to \$67,500,000. The Dominion now ranks fourth among the countries of the world in the production of manufactured rubber goods. In 1920, Canada imported 10,400 tons of crude rubber, an amount only exceeded by the United States, Great Britain, and France. To a great extent the growth of this industry is fostered by the Customs Act of 1907, which allows the importation of crude rubber and gutta percha in its various unmanufactured forms free, but imposes a protective tariff on manufactured rubber goods.

There are in all twenty-two companies, financed by British, United States and Canadian capital, in operation. Thirty-two plants produce practically all kinds of rubber goods other than vulcanite and hard rubber. The largest of these companies is the Canadian Consolidated Rubber Company, which, with its associated companies, is known as the Dominion Rubber System. This company and its subsidiaries manufacture mechanical goods, rubber hose and belting, drug sundries, and rubber footwear, tennis and sports shoes, and wood lasts for the rubber trade, and reclaims rubber. The annual financial statement of the Canadian Consolidated Rubber Company for 1920 gives some idea of the extent of its operations. The net sales during the year amounted to \$26,675,513, as compared with \$22,162,978 in 1919 and \$18,785,640 in 1918, an excellent showing in view of the reduced demand of the latter half of 1920.

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

The table which follows admirably illustrates the expansion of manufacturing industries:—

\*A COMPARATIVE TABLE OF THE VALUE OF MANUFACTURES IN THE TEN PRINCIPAL CITIES OF CANADA IN 1900, 1910, 1915 AND 1917

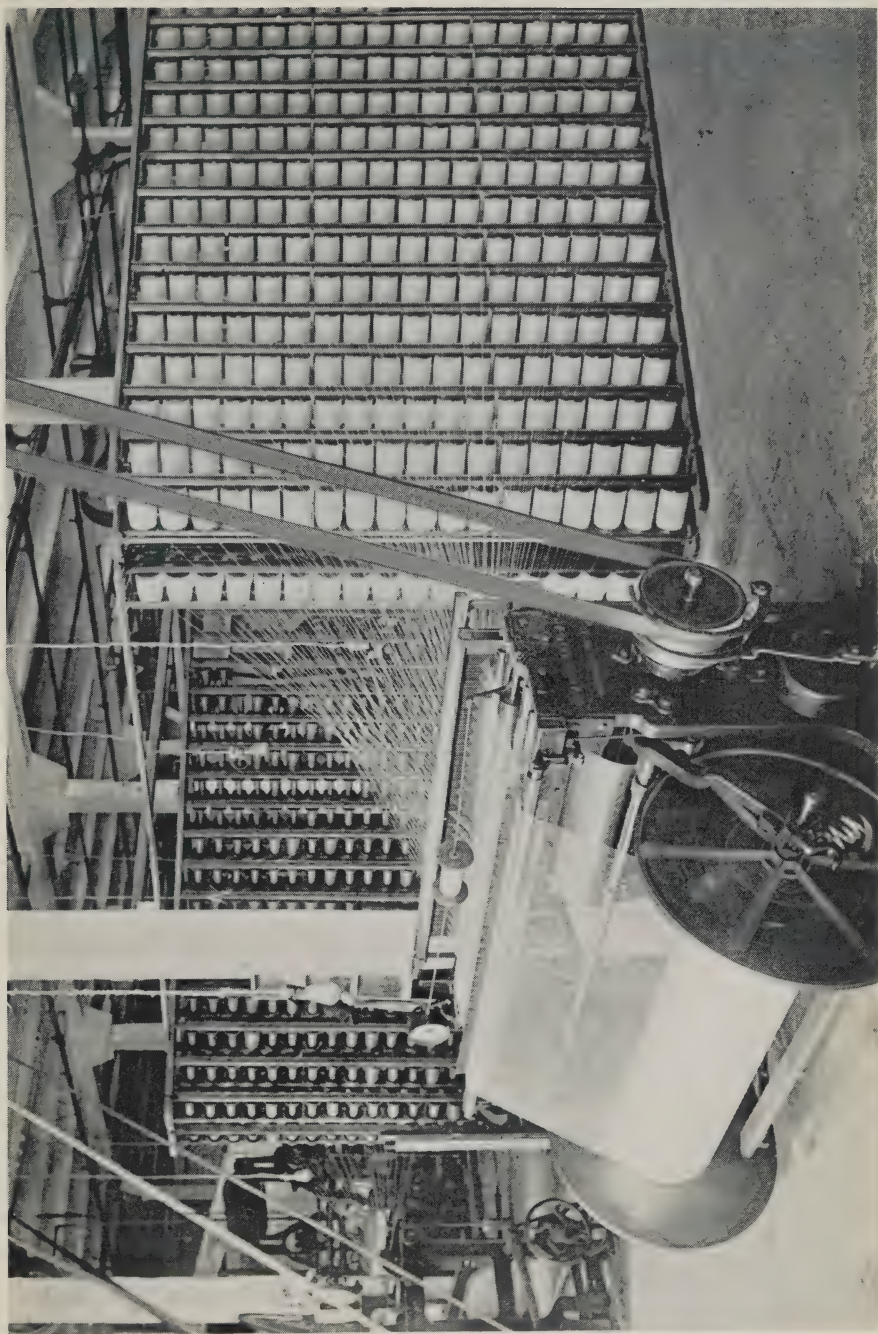
	Values of Products				Increases per Cent		
	1900	1910	1915	1917	1900 to 1910	1910 to 1915	1915 to 1917
Montreal..	\$ 71,099,750	\$166,296,972	\$243,237,575	\$493,727,258	133.89	46.20	102.98
Toronto...	60,366,857	154,306,948	219,143,728	456,250,198	155.62	42.02	108.15
Hamilton..	17,122,346	55,125,946	66,063,339	163,506,406	221.95	19.84	147.49
Winnipeg..	8,616,248	32,699,359	47,686,070	98,101,632	279.38	45.77	105.72
Vancouver.	4,990,152	15,070,105	33,871,044	57,172,309	202.00	124.75	69.09
Quebec....	12,779,546	17,149,385	18,933,227	34,857,741	34.19	10.40	84.11
Ottawa....	7,638,688	19,877,233	18,947,325	34,671,203	161.52	4.67	82.99
London.....	8,122,185	16,273,999	18,885,212	34,615,211	100.36	16.04	83.29
Kitchener..	3,307,513	9,266,188	16,408,401	30,171,284	180.15	77.07	83.89
Halifax...	6,927,552	12,140,409	15,119,527	15,247,469	75.25	24.53	0.85

The war was an added and tremendous impetus to almost all industries. While agriculture and the production of foodstuffs remained of paramount importance, manufactured products essential to the army had to be found. Industry was at high pressure. New machinery was installed, not only for the production of munitions but also in the textile, boot and shoe, food products, and lumber industries. The production of raw material was increased; factory methods were more specialized; a higher degree of mechanical and administrative efficiency became apparent. In 1914, agriculture formed 45.9 per cent of Canada's total exports, and manufactures 13.2 per cent. At the Armistice agriculture formed 13.68 per cent and manufactures 41.3 per cent. From these figures some idea may be had of the growth of industry throughout the Dominion.

The 1918 figure is of course abnormal. The following chart, however, shows the increase in percentages of exports of manufactured products from 1880 to 1920, the figures used being *averages* for ten- and five-year

\*From "Canadian Goods and the World Market," Canadian Bank of Commerce, Toronto, 1921.—The figures given in the table are for 1917 but more recent development has given Brantford and the Border Cities of Walkerville, Ford and Windsor a high standing.





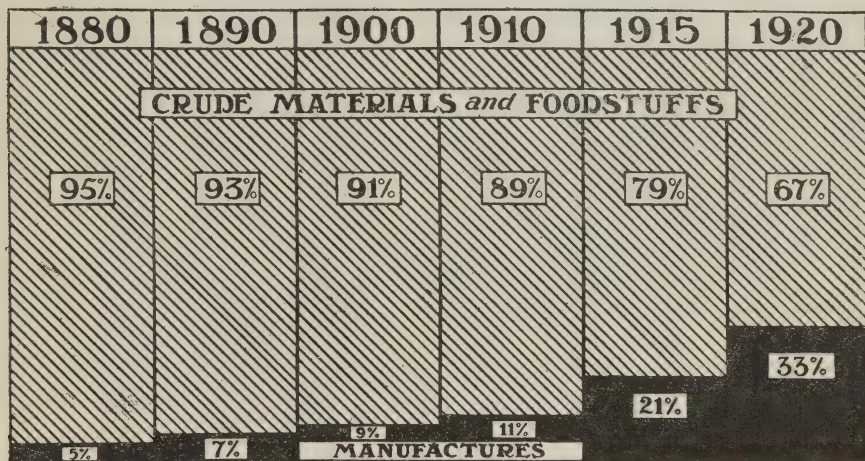
INTERIOR OF LINEN FACTORY, GUELPH, ONT. WARPING MACHINE





## CANADIAN TRADE, PAST AND PRESENT

periods. The percentages shown are thus conservative, but even so indicate an increase in the growth of Canadian manufacturing industries of 300 per cent in the last decade and 650 per cent in the last forty years. Exports of crude materials and foodstuffs are represented by the shaded area, manufactured products by the heavy black:—



Even considering that the foregoing graph is based on average figures for a period of years, it must be admitted that latterly the increase is in great measure due to the impetus of the war. But this impetus will not be lost; its influence will remain as one of the specific benefits resulting from the intensive period of 1914 to 1918.

The first table overleaf, showing the summary of the trade of Canada by classes for the fiscal years ending March 31, 1914, 1920, and 1921, gives a very fair idea of how Canada's trade is increasing. Trade conditions during the abnormal period of the war have been omitted. The second table, that of imports and exports by countries, deserves close study. The significant increases are in export to Australia, Bermuda, South Africa, the British West Indies, Hong Kong, Newfoundland, New Zealand, and other British possessions; to the Argentine, Cuba, Mexico, the Netherlands, Spain, South American countries and the United States. Exchange depreciation accounts for the temporary reduction of export to the British Isles during the fiscal years 1920 and 1921, although the last figure is still over 40 per cent greater than in 1914. France remains Canada's third best customer. Canada is at present paying much attention to the Orient, South America and the British West Indies, and it may be fairly said that the figures here given are indicative of greatly increased trade in these directions.

# CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

1.—SUMMARY OF THE TRADE OF CANADA, BY MAIN CLASSES, DURING THE FISCAL YEARS ENDED MARCH 31, 1914, 1920, AND 1921;  
WITH PORTIONS IMPORTED FROM AND EXPORTED TO THE UNITED KINGDOM AND THE UNITED STATES

Classes	Total Trade			Trade with United Kingdom			Trade with United States		
	1914	1920	1921	1914	1920	1921	1914	1920	1921
<i>Imports for Consumption</i>									
Vegetable Products .....	97,627,371	242,075,389	261,081,364	16,202,907	17,004,533	38,730,767	44,118,714	142,510,266	121,326,805
Animal Products .....	41,092,915	95,098,743	61,722,390	5,737,729	3,789,311	5,144,890	23,295,875	77,010,313	43,014,952
Fibres and Textile Products .....	110,577,319	231,559,877	243,608,342	60,834,336	74,653,042	111,328,091	33,629,754	132,292,083	101,758,005
Wood, Wood Products & Paper .....	40,616,701	83,183,267	57,449,384	3,998,296	1,515,780	3,144,574	34,522,108	40,719,024	52,360,362
Iron and Its Products .....	143,864,735	186,319,876	245,626,453	17,262,813	6,637,067	16,698,085	121,342,038	178,661,606	226,862,465
Non-Ferrous Metal Products .....	35,664,771	52,103,913	55,553,152	4,785,570	3,339,207	6,680,955	27,818,942	46,868,193	45,868,622
Non-Metallic Mineral Products .....	85,157,392	121,956,176	206,095,113	6,281,813	6,945,566	9,118,403	74,060,769	108,525,324	188,484,295
Chemicals and Allied Products .....	17,104,393	29,886,102	36,334,612	4,293,412	4,154,345	6,037,185	9,583,462	23,854,300	26,787,896
All Other Commodities .....	47,488,401	62,344,780	72,688,072	12,673,530	8,323,780	17,061,864	27,930,476	50,656,209	50,150,028
Total Imports (mdse.) .....	619,193,998	1,064,528,123	1,240,158,882	132,070,406	126,362,631	213,944,814	396,302,138	801,097,318	856,613,430
Dutiable Imports .....	410,258,744	693,655,165	847,561,406	102,375,867	93,244,969	170,142,148	249,482,610	499,616,625	544,337,797
Free Imports .....	208,935,254	370,872,958	392,597,476	29,694,539	33,117,662	43,802,666	146,819,528	301,380,693	312,275,633
Per Cent of Free Imports.	33.7	34.8	31.6	22.5	26.3	20.4	37.0	37.6	36.4
<i>Exports (Canadian Produce)</i>									
Vegetable Products .....	201,446,644	416,122,771	482,024,672	146,854,812	249,708,100	141,341,101	34,095,266	55,735,692	147,083,435
Animal Products .....	70,591,013	314,017,044	188,359,937	35,619,012	138,885,094	91,231,301	31,320,872	130,097,017	75,781,986
Fibres and Textile Products .....	63,201,624	34,028,314	18,783,884	35,234,364	45,851,357	91,231,301	45,201,899	12,472,436	7,121,882
Wood, Wood Products & Paper .....	15,483,494	213,913,044	284,561,478	12,805,898	45,022,232	32,753,284	45,201,899	153,426,430	215,075,882
Iron and Its Products .....	53,431,764	81,785,829	76,500,741	4,330,560	15,874,157	17,653,826	2,044,230	25,717,121	30,630,913
Non-Ferrous Metal Products .....	9,263,146	55,347,802	46,177,004	1,561,574	9,267,335	9,873,516	34,341,591	37,911,834	30,267,047
Non-Metallic Mineral Products .....	4,516,044	30,289,333	40,034,566	16,434,816	3,121,157	3,127,243	7,155,999	17,462,792	22,257,947
Chemicals and Allied Products .....	5,731,198	22,209,660	19,344,424	496,469	3,594,180	3,225,947	3,031,518	13,437,176	11,465,207
All Other Commodities .....	431,588,439	71,776,501	37,476,995	1,016,460	22,828,995	6,925,401	3,975,619	16,607,955	12,750,410
Total Exports (mdse.) .....	1,239,492,098	1,189,163,701	215,253,969	489,152,637	312,842,921	163,372,825	464,028,183	542,304,456	18,378,969
<i>(Foreign Exports Produce)</i>									
Totals only .....	23,848,785	47,166,611	21,264,418	7,068,323	6,807,481	1,383,800	13,575,474	37,101,934	18,378,969

# CANADIAN TRADE, PAST AND PRESENT

2. IMPORTS FOR CONSUMPTION AND EXPORTS OF CANADIAN PRODUCE BY COUNTRIES, YEARS ENDED MARCH 31, 1914, 1919, 1920, and 1921

Countries	Imports for Consumption (Mds.)				Exports of Canadian Produce (Mds.)			
	1914	1919	1920	1921	1914	1919	1920	1921
<i>British Empire</i>								
United Kingdom.....	132,070,406	73,035,118	126,362,631	213,944,814	215,253,969	540,750,977	489,152,637	312,842,921
Australia.....	713,111	4,963,446	1,371,775	791,980	4,673,997	14,019,629	11,415,623	18,114,496
Bermuda.....	7,539	39,056	55,604	76,959	383,151	1,179,025	1,249,020	1,523,992
British Guiana.....	3,179,112	6,747,072	7,412,931	9,088,567	649,675	2,646,169	3,109,381	3,594,118
British Honduras.....	155,396	298,906	302,043	134,739	9,298	51,808	29,350	38,783
British India.....	5,006,309	8,395,290	7,785,254	6,756,712	416,373	2,905,426	4,818,053	4,196,350
British South Africa.....	477,823	1,300,259	7,735,948	146,798	3,831,270	11,992,135	8,649,756	14,648,879
British West Africa.....	29,118	7,757	174,928	104,719	39,011	173,515	1,067,639	666,576
British West Indies.....	4,347,310	8,437,825	12,114,790	14,833,746	4,469,329	10,200,582	10,869,276	13,030,225
Egypt.....	49,064	16,073	10,271	391,326	62,677	924,932	227,652	914,718
Fiji.....	240,719	525,804	714,306	1,510,599	118,441	117,962	124,005	170,879
Gibraltar.....	17	.....	.....	1,073	58,004	607,637	4,380,054	509,814
Hong Kong.....	1,010,021	2,121,909	3,208,836	3,516,760	1,879,261	995,116	1,343,867	2,000,825
Newfoundland.....	1,840,523	3,098,834	2,146,414	2,886,203	4,508,090	11,325,235	16,175,443	16,695,426
New Zealand.....	3,192,900	7,855,436	3,494,600	4,219,965	1,933,698	6,227,892	6,987,008	11,873,000
Other British East Indies.....	1,646,835	1,746,481	3,181,978	2,355,042	39,496	82,071	201,652	348,804
Straits Settlements.....	565,843	5,081,663	5,269,180	5,129,473	230,455	844,244	1,742,554	1,843,744
Other British Empire.....	43,864	611	9,888	21,747	168,999	115,434	245,033	457,052
Total British Empire.....	154,526,846	123,671,540	174,351,659	265,911,222	238,642,517	605,159,789	561,788,003	403,470,602
<i>Foreign Countries</i>								
Alaska.....	66,470	52,787	415,585	309,463	134,238	300,112	432,744	482,312
Argentina Republic.....	2,603,128	1,139,267	3,402,554	2,403,938	2,134,522	4,603,130	6,126,457	8,172,108
Austria-Hungary.....	1,773,021	.....	99,723	96,164	368,425	.....	33,168	129,536
Belgium.....	4,490,476	6,270	41,407	4,660,252	4,269,394	.....	28,463,855	40,252,487
Brazil.....	1,163,785	1,156,332	1,973,768	2,151,066	767,858	4,088,534	2,703,488	2,835,191
Chile.....	767,289	1,059,557	240	97,579	134,457	2,321,329	890,960	864,309
China.....	913,262	1,954,466	1,205,229	1,888,521	473,074	2,856,933	6,665,805	4,906,570
Colombia.....	150,545	158,202	502,656	388,084	25,686	44,540	101,578	149,841
Cuba.....	3,952,887	3,040,953	17,585,528	30,743,239	1,815,414	5,035,975	6,329,783	6,573,768
Denmark.....	112,629	41,252	105,310	119,994	637,286	42,039	2,938,026	523,485
Dutch East Indies.....	976,090	3,334,746	3,709,400	993,764	20,366	996,575	1,492,775	2,426,087
France.....	14,276,535	3,632,900	10,630,865	19,006,902	3,632,444	96,103,142	61,108,693	27,428,308
Germany.....	14,586,223	.....	.....	1,547,685	4,044,019	.....	610,528	8,215,337
Greece.....	445,036	75	44,255	1,817,157	11,934	.....	29,588,984	20,834,577
Guatemala.....	110,764	216,101	729,830	817,157	11,934	16,902	46,400	132,004
Hawaii.....	61,365	3,467,856	185,809	292,498	49,862	93,951	163,970	132,798
Italy.....	2,090,387	355,112	403,687	225,755	29,672	709,246	16,959,557	57,758,347
Japan.....	2,604,216	13,618,122	999,040	1,745,330	514,660	13,181,514	7,732,514	6,414,920
Mexico.....	1,471,182	384,047	13,637,287	11,359,003	1,587,467	12,245,439	1,410,825	1,086,197
Netherlands.....	3,015,456	495,409	2,661,169	2,185,399	51,747	568,943	5,653,218	20,208,418
Norway.....	.....	.....	.....	4,231,552	3,985,985	198,985	.....	.....

\* In 1914 Egypt was dealt with as a "Foreign Country."



# CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

2. IMPORTS FOR CONSUMPTION AND EXPORTS OF CANADIAN PRODUCE BY COUNTRIES, YEARS ENDED MARCH 31, 1914, 1919, 1920 and 1921—*Concluded*

Countries	Imports for Consumption (Mds.)			Exports of Canadian Produce (Mds.)				
	1914	1919	1920	1921	1914	1919	1920	1921
<i>Foreign Countries—Con.</i>								
Norway.....	486,379	25,785	461,848	616,978	845,331	1,149,123	4,798,299	5,119,365
Panama.....	748,546	2,580,813	5,072,408	4,171,912	222,741	1,165,700	409,291	450,202
Peru.....	5,715	169,896	47,014	229,907	11,817	283,022	273,967	614,472
Philippine Islands.....	1,613	2,488	1,910	517,222	60,806	68,551	292,547	511,741
Porto Rico.....	277,381	111,689	312,912	517,222	542,962	1,071,805	1,489,667	1,315,716
Roumania.....	4,556	83,888	14,496	17,390	55,481	1,367,446	197,385	1,476,894
Russia.....	482,809	4,728,732	10,675,287	7,578,794	69,800	6,164,658	12,953,605	3,801,584
San Domingo.....	2,942,333	697,643	1,528,298	2,308,829	1,430,426	1,492,041	1,492,041	246,719
Spain.....	1,352,133	178,855	360,353	549,187	59,721	39,663	169,186	247,436
Sweden.....	603,401	1,780,812	7,758,051	14,143,448	63,995	231,095	1,096,053	5,110,725
Switzerland.....	4,314,805	750,203,024	801,097,518	856,613,430	177,313	19,220	4,449,105	5,528,361
Turkey.....	494,981	328,687	322,086	451,357	21,439	7,665	1,484,416	1,410,777
United States.....	396,302,138	149,155	299,240	451,357	469,378	621,023	2,356,717	2,791,538
Uruguay.....	133,243	485,211	584,508	645,860	163,372,825	454,873,170	464,028,183	542,304,456
Venezuela.....	781,583	796,040,165	890,176,464	974,247,660	90,615	332,952	689,538	816,503
Other Foreign Countries.....	464,667,152	919,711,705	1,064,528,123	1,240,158,882	139,264	40,441	404,007	278,541
Total Foreign Countries.....	619,193,998	796,040,165	890,176,464	974,247,660	560,819	1,490,876	2,686,760	4,141,473
Grand Total.....					192,945,922	611,284,017	677,704,095	785,693,099
					431,588,439	1,216,443,806	1,239,492,098	1,189,163,701



## CANADIAN TRADE, PAST AND PRESENT

A significant feature of post-war development in Canada is the part played by the United States. The United States for many years past has entered into the development of Canadian resources, supplying both capital and labour and establishing industries on the Canadian side of the Border. The nickel and asbestos production of Canada is largely in hands of American companies; many of her timber products and a proportion of pulp and paper production are also American. There are in all over 600 United States branch factories or subsidiaries in the Dominion, among which may be cited the International Nickel Company, Limited, the Montreal Locomotive Works, Limited, the Canadian Consolidated Rubber Company, Limited, the International Harvester Company, Limited, the Canadian General Electric Company, Limited, subsidiaries of the International Paper Company, the Ford Motor Company of Canada, Limited, General Motors, Limited, and the Studebaker Corporation of Canada. Canada owes much to American initiative, capital, and immigration.

But the present development of Canada is as little to the promise of the future. Her population is growing, vast resources are as yet untouched, and her growth and expansion bid fair to rival the remarkable record of the United States in the nineteenth century. The time is ripe for a closer industrial co-operation, and in Canada's future development British enterprise, British capital and British workmanship have their part to play.



## LABOUR IN CANADA





## CHAPTER IV

### LABOUR IN CANADA

#### §1. ECONOMIC INFLUENCES

To appreciate fully the status and condition of labour in Canada, one must consider the extraordinary influences which bear directly upon it, and which find no exact parallel elsewhere. A new country, as yet scarcely developed, covering the prodigious area of 3,729,000 square miles, populated by approximately 8,500,000 people, and subject to a wide variation of temperature and climatic conditions, cannot fail to evolve problems peculiarly its own in respect of industrial labour and the economic problems deriving therefrom. The basic factors directly affecting the labour problem are: the geographical aspect of Canada, its climate, the proximity of an older and far larger nation, and the constant flow of immigration.

Geographically, the Dominion is divided into well-marked eastern and western areas at approximately the Ontario-Manitoba border. More specifically, however, the four great divisions which are discussed at greater length in a previous chapter must be considered. The first is the Atlantic area, comprising the Maritime Provinces and lower Quebec; the second, the great inland industrial area extending from Quebec City to the border and thence to the head of lake Erie; the third, the prairie country, or wheat belt of Western Canada, from Winnipeg to the foothills of the Rockies; and the fourth, the Pacific Slope. With the exception of a strip of rugged and uncultivated country running north from lake Superior, and of course the Rocky mountains, all these districts impinge upon each other and there is no break in the continuity of industrial or agricultural life. It is necessary to visualise these zones and the distinctive economic and industrial entity of each to appreciate fully the tremendous influence of the geographic factor on Canadian labour.

The Atlantic area (that is to say the Maritime Provinces and lower Quebec) is not densely populated and is largely agricultural. Little industry other than coast fishing, canning, lumbering, and (in Nova Scotia) steel and coal, exists, except in a limited way in certain of the more important cities. The labour supply is conservative, lower priced on the whole than in the inland areas, and ample for existing requirements. The main industrial area of Canada is south-western Quebec and southern Ontario. Eastern Quebec is almost wholly agricultural and the northern districts are chiefly

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

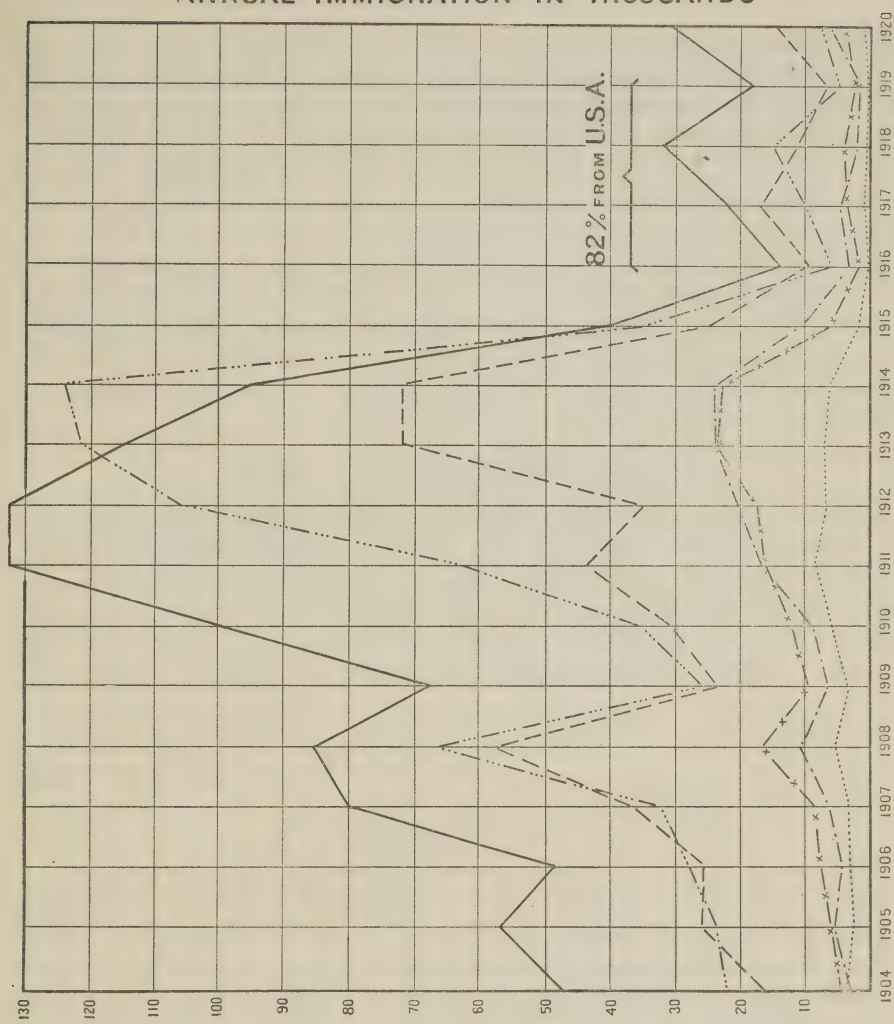
concerned with lumbering. Quebec is populated largely by descendants of the early settlers of New France. They are chiefly of the Roman Catholic faith, and continue to use the tongue of their ancestral country, differing therefore in language from the majority of the population, which is of course English-speaking. Bilingualism obtains throughout the province, and prevails to a large extent in education and commerce. In the other half of the main industrial area, southern Ontario, branches of United States factories are numerous. Traffic with the border states is abundant and has produced a large degree of assimilation in the business methods of the communities north and south of the border line,—labour tending to be higher in cost than in Quebec. The Prairie Provinces of Manitoba, Saskatchewan and Alberta are almost wholly agricultural, and to a large extent populated by immigrant labourers and farmers. The development of water-power near Winnipeg and Calgary, however, is likely to result in increased industry. The Pacific Slope, centring on the cities of Vancouver and Victoria, is industrially of great and growing importance because of the immense power sources and the proximity of the Oriental and Australasian markets. In British Columbia a supply of cheap Hindoo and Japanese labour was at one time important, but is becoming less so because of more stringent immigration regulations. White labour, however, is more highly paid in British Columbia than elsewhere in Canada, chiefly because of higher living costs.

It is evident from a glance at the map that the primary development of Canada is inevitably along its southern border, because of (a) the difficulty of access to, and the climatic conditions of the northern districts; (b) the remarkable system of waterways from the Great Lakes to the Atlantic; and (c) the attraction of United States industries and markets. Canadian industrial activity is largely pressed against the United States border.

### §2. IMMIGRATION

A factor of obvious importance in the Canadian labour market is immigration. It is not necessary to cite here immigration figures or statistics; it is sufficient to say that in normal times immigration more than met the demands of growing industry. The original impetus was given to immigration a few years after Confederation, when the Canadian Pacific Railway built the first great railway line across the continent. From that date immigration steadily increased until the war period, when, of course, it was reduced to its lowest point. Were the figures available it would probably be found that a very great percentage of both Canadian and United States immigration is sympathetic in character; in many cases prepaid tickets are forwarded to their families and relations by

# ANNUAL IMMIGRATION IN THOUSANDS



## IMMIGRATION INTO CANADA

1903 --- 1920

BY  
OCCUPATIONS OR CALLINGS

FISCAL YEARS ENDING  
MARCH 31ST OF YEAR INDICATED

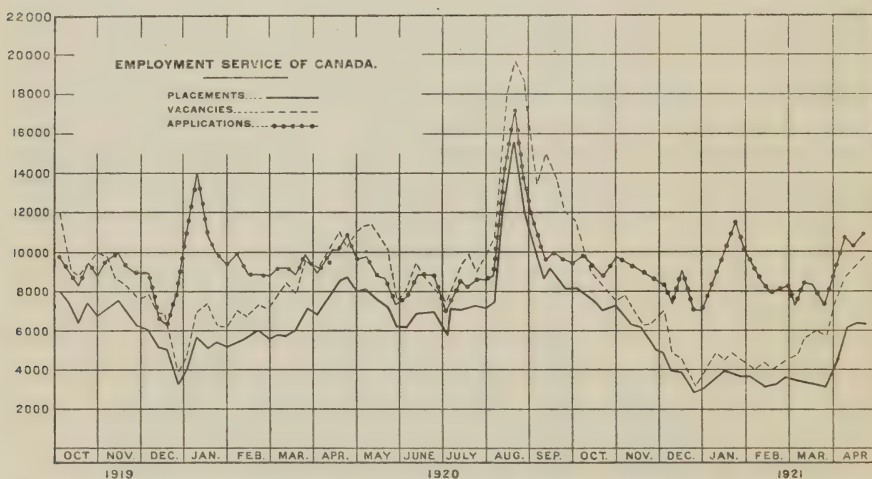
LEGEND	
GENERAL	—
FARM	- - -
MECHANICS	· · ·
DOMESTIC	— x —
OTHER	— A —

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

the original settlers who have found their opportunities in this new world. The Canadian Government and the Canadian Pacific Railway directly encouraged two classes of immigrants, the agricultural labourer and the domestic. However, an examination of statistics from 1904 to 1920 shows that industrial workers, that is to say, labourers, mechanics, artisans and machinists, constituted about forty per cent of the total male immigration. The regulations regarding immigration have recently been made more stringent in respect of financial, educational and physical qualifications. The Alien Labour Act, a retaliatory measure directed against countries having similar legislation against Canada, prohibits the importation of contract labour, with certain exceptions as to family, specialized trades and so on. This Act does not, of course, operate against the United Kingdom.

### §3. EMPLOYMENT SERVICE OF CANADA

Due to the cumulative demand arising from the diverted production of many industries during the war, Canadian industrial activity reached its peak during the period 1918-1920. Little unemployment existed, and wages were generally high. The subsequent financial depression gradually glutted the labour market and unemployment became a national problem of vital interest to both provincial and federal governments.



The Employment Service of Canada, the result of an Act passed in 1918 to assist in the problem of demobilization, was expanded to meet these conditions. It is designed as a mechanism to correlate the demand for, and availability of, labour throughout Canada. It is partly financed by



## LABOUR IN CANADA

the provinces and partly by the Dominion, but is directly under the administrative control of the Provincial Governments. It has established through the Dominion seventy-seven local offices, by provinces as follows:—

Nova Scotia.....	4
New Brunswick.....	1
Quebec.....	5
Manitoba.....	9
Alberta.....	7
Ontario.....	26
Saskatchewan.....	10
British Columbia.....	15

Through these offices, linked together by provincial and interprovincial clearing houses, employer and employee are placed in direct communication with one another, and general information relative to employment and labour is supplied to any one interested. The Employment Service is by no means confined to local activities, but includes a system of cheap transportation, whereby labour may be transferred to such points as require it, not only within provinces, but also interprovincially. During the year 1920, the Employment Service of Canada placed some 450,000 applicants in employment, about 11 per cent at some distance from the point of their application to the Service. The value of such a service in co-ordinating current supply and demand, particularly in a country of such wide extent and small population as Canada, cannot be over-estimated. There is no charge connected therewith.

### §4. TECHNICAL EDUCATION

Another question affecting labour in Canada is that of technical education. In 1910 the Canadian Government appointed a Royal Commission which spent two years investigating technical education in North America and Europe, and prepared a definite programme for the development of this work in Canada. Industrial training or technical education as outlined in the report of the commission has for its aims: (1) preservation of health and the vigour of life; (2) the formation of good habits; (3) the development of the sense of responsibility and duty; (4) the preparation of the body, mind and spirit for following some useful occupation; (5) the cultivation of the mental powers, the acquisition of knowledge and the development of the scientific spirit with direct reference to the occupation; (6) the promotion of goodwill and desire and ability to co-operate with others; (7) the maintenance of standards and ideals; (8) as all-inclusive and ultimate, the perfecting of the human spirit, the improvement of the quality of life itself and the betterment of the conditions of labour, leisure, and living.

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

The war prevented immediate action on the recommendations of the commission, but in July, 1919, the Government passed the Technical Education Act, by which a total of \$10,000,000 is to be granted to the provinces during a period of ten years for the purpose of promoting technical education. This assistance has given a decided impetus to the work and every province is now building new technical schools. The total number operating in the Dominion in 1920 was 139, with an aggregate enrolment of 60,546 students.

These schools conduct courses in every branch of industrial and commercial occupations. Pre-vocational classes prepare juniors for apprenticeship or for regular vocational courses. Part-time co-operative or continuation classes provide special instruction for apprentices and juvenile employees. Evening unit courses are provided for skilled and unskilled workers in all branches of industry who wish to prepare themselves for promotion. Vocational and technical day classes prepare students for employment in industry and for entrance into advanced classes in technical and commercial colleges and universities. Special classes are provided for women and girls. Correspondence courses in mining are conducted in British Columbia, Alberta and Nova Scotia.

The major lines of activity to which the vocational or technical education programme is being adjusted are: (1) wholesale and retail business, including importing and exporting; (2) banking, brokerage, and insurance; (3) metal products—hardware, machines and tools, automobiles, heating and ventilating equipment, electrical equipment, farm implements and machinery, steam power equipment—stationary, marine, and locomotive—and railroad equipment; (4) wood products—buildings, furniture, pulp and paper, farm equipment, vehicles, and automobile bodies; (5) mining—coal, gold, silver, copper, and nickel; (6) railroad operation—apprentices, shopmen, trainmen, enginemen, telegraphers; (7) marine engineering and navigation; (8) stationary steam engineering and steam power plant operation; (9) hydro-electric power plants—transmission of electrical energy for lighting, heating, street and inter-urban electric railway purposes; (10) home-making and wage-earning occupations for girls and women; (11) the skilled and semi-skilled trades; (12) agriculture; (13) municipal, provincial and federal Civil Services.

Vocational schools are controlled by Advisory Committees of the Municipal Boards of Education, consisting of representatives of the board, of employers and of employees. The courses of study are organized to meet the needs of each community—industrial, agricultural, or

## LABOUR IN CANADA

whatever they may be—and new courses are added as occasion demands. The point of most significance to the manufacturer is that the Advisory Committee co-operates with local industries in providing the most beneficial type of instruction to all classes of workers.

### §5. TRADE UNIONISM

In the years preceding the confederation of the provinces of the Dominion in 1867, labour unions came into existence in the older districts of Canada, some of these being formed by workmen who had come from the Mother Country and were anxious to maintain their connection with the British organizations to which they had belonged. Also in those years there was, as now, an active movement to and fro across the border among workmen. Labour unions were naturally more numerous in the United States with its larger industrial development, and a spirit of fraternity in trades union matters developed between the workers of the two countries. Active trade union organization in Canada dates from about 1880. With the growth of industry in the Dominion, labour unions became more numerous; many of the labour organizations with headquarters in the United States, which had not previously included Canada in their respective jurisdictions, established local branches in the Dominion. Thus the trades union movement in Canada has developed largely on international lines. Generally, save in the case of the operating railroad brotherhoods, the labour organizations of North America are in affiliation with the American Federation of Labour, which speaks for the United States members of its affiliates on questions of legislation, and is perhaps the most powerful labour organization in the world. The legislative mouthpiece for the Canadian members of the international labour organizations is the Trades and Labour Congress of Canada, a body established in 1873, and which works in close harmony with the American Federation of Labour and its affiliated unions. The 101 international labour organizations operating in Canada at the close of 1920 had in the Dominion a combined membership of 267,247, comprised in 2,455 local branches. Most central bodies have resident officials in Canada to guard their interests, and many of them have accounts with Canadian banks through which their financial business in the Dominion is transacted. While the majority of the wage-earners in Canada are therefore identified with organizations having their general offices in the United States, the local branches in Canada have considerable autonomy in their affairs. They are, however, enjoined from going on strike until the matters in dispute have been reported to the general or Canadian officers, who are required to endeavour to effect settlements without a stoppage of work. The final decision on the question of strikes



## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

rests in most instances with the local branches. In a few industries agreements as to wages and working conditions are prepared through negotiations between the employers and representatives of the unions concerned, the terms agreed upon applying to the employees of both Canada and the United States. Besides the international trades union organizations, there are in Canada 106,595 members of labour organizations, comprised in 463 local branches, and having no affiliation outside of the Dominion. The total membership of organized labour bodies in Canada at the end of the year 1920 stood at 373,842. The industries most thoroughly organized are those connected with railroads, these having a combined membership of 93,104; the building trades unions comprise 39,712 members and the metal trades 33,655. The other definite trade groups stand as follows: Transportation and navigation (exclusive of the railroads), 28,742 members; public employees, personal service and amusement, 26,809 members; mining and quarrying, 22,564 members; clothing, boots and shoes manufacturing, 20,567; printing, 9,338. Other organized workers not classified numbered 99,351.

### §6. ESTABLISHMENT OF INDUSTRIAL COUNCILS

Of recent years the question of industrial councils has occupied the attention of both the Dominion and Provincial Governments. In 1919 a Royal Commission visited all parts of the Dominion to collect information and opinions as to the best means of securing a better understanding between capital and labour, and of dealing with industrial disputes. The data collected and the conclusions arrived at by this Commission were summarized in a report which resulted in the National Industrial Conference held in Ottawa, February 21, 1921, for the purpose of stabilizing industrial conditions throughout the Dominion. This national conference was attended by representatives of the Government, of employers, and of employees from all parts of Canada. The matters dealt with included such subjects as strikes, working hours, the relation of wages to the cost of living, and the recognition of trade unions. There followed from this conference the establishment throughout Canada of joint industrial councils in which employer and worker is equally represented, and which are organized and administered by the industries themselves.

The Dominion Government as a member of the League of Nations and the International Labour Conference is actively interested in these industrial councils. The Department of Labour publishes a bulletin designed to be of assistance in administration, and to keep both employer and employee posted as to existing conditions elsewhere. The department also maintains several representatives to assist upon request in organization and operation.



## LABOUR IN CANADA

Recent conferences in Ottawa between the Department of Labour and representatives of industries which have already established joint councils, indicate that they are operating satisfactorily, and have met with general approval on the part of both employers and workers.

### §7. STRIKES AND LOCKOUTS

In respect of the industrial situation as indicated by labour disputes, Canada would seem to be in a favourable position as compared with the United States and Great Britain.

The method of compiling strike statistics in Canada is similar to that followed in Great Britain, and the figures are readily comparable. In the United States, however, methods of computation are somewhat different. In Great Britain and Canada the loss of time through strikes is estimated by multiplying the number of days during which the strike was in progress, by the number of workers affected. In the United States no attempt is made to estimate time losses by this method, but only the average duration of strikes is given in official statistics. Hence, in any comparison of time losses, the result favours the United States, for its time losses must necessarily be based upon average duration, whereas those of Canada and Great Britain are based upon aggregate duration.

It is of interest to remark that in the State of New York, the population of which is slightly larger than that of Canada, industrial disputes for the year ending June 30, 1920, affected 334,188 workpeople, and involved the time loss of 10,608,483 working days, while the Canadian figures for the same period were 68,967 workpeople affected, and 2,347,336 working days lost.

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

Carrying the comparison still further between Great Britain, Canada and the United States for the years 1914 to 1920, it will be seen that the comparison is in Canada's favour in all instances, taking into account, of course, the ratio between the respective populations:—

Year	Country	Number of strikes	Number of employees affected	Time loss in working days
1914.....	Great Britain.....	999	448,529	10,111,337
	Canada.....	44	8,678	430,054
	United States.....	1,204	296,720	*
1915.....	Great Britain.....	706	452,571	3,038,134
	Canada.....	43	9,140	106,149
	United States.....	1,420	504,281	*
1916.....	Great Britain.....	581	284,396	2,599,800
	Canada.....	75	21,157	208,277
	United States.....	3,789	1,599,717	35,198,174
1917.....	Great Britain.....	688	860,727	5,963,900
	Canada.....	148	48,329	1,134,970
	United States.....	4,450	1,227,254	22,090,572
1918.....	Great Britain.....	1,252	1,096,828	6,237,100
	Canada.....	196	68,489	763,241
	United States.....	3,353	1,239,989	22,319,802
1919.....	Great Britain.....	1,413	2,581,000	34,483,000
	Canada.....	298	138,988	3,942,189
	United States.....	3,569	4,154,420	141,250,280
1920.....	Great Britain.....	1,715	1,932,000	27,011,000
	Canada.....	285	52,150	886,754
	United States.....	3,167	1,416,581	48,163,754

\*Impossible to estimate because United States statistics do not give average duration for these years.

### §8. LABOUR LEGISLATION

Early labour legislation in Canada was in the main based on British precedent. A departure of some significance, however, was the Industrial Disputes Investigation Act of 1907, legislation designed to compel the investigation of disputes in mines and in public utilities, before a strike or lockout could be lawfully declared. The act also provides that any industry may by consent of the parties be brought under the operation of the act. The object of the act was the protection of the public interest by due warning, but the act does not prohibit strikes nor compel the acceptance of arbitration awards.

From the point of view of the manufacturer, the most important type of labour legislation is that relative to workmen's compensation and working conditions. These are dealt with exclusively by provincial enact-

## LABOUR IN CANADA

ments, with the exception of Dominion legislation applying to Dominion employees only.

The majority of Canadian provinces are, however, gradually adopting uniform provincial laws. Six provinces have exclusive State insurance; six provinces and the Yukon pay compensation to workmen without regard to the amount of their remuneration; in all the provinces and in the Yukon the burden of payment rests on the employer, but in six provinces the liability is born collectively by groups of employers. Full medical and hospital aid is furnished the injured workmen in five provinces, but in Nova Scotia it is limited to thirty days. In Alberta and British Columbia the cost of medical aid is paid by deductions from wages. Six provinces make injuries due to certain industrial diseases subject to compensation.

A summary of workmen's compensation legislation follows overleaf.

# CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

## SUMMARY OF WORKMEN'S

	Nova Scotia	New Brunswick	Quebec
1. Death, funeral dependents.....	\$75..... Widow \$30.00 per month. Child \$7.50 each up to 16 years. Maximum \$60.15 if children only.	\$100.00..... \$30.00 per month. \$7.50 each up to 16 years. Maximum 55% of earnings.	\$50.00 including medicine.— Minimum \$1,500.... Maximum \$3,000....
2. Permanent total disability.....	55%..... Maximum 55% of \$1,200.00. Minimum \$5.00 per week.	55%.....	50% up to \$1,000 and 25% after up to \$1,500.
3. Permanent partial disability.....	55% of difference of earnings. Maximum 55% of \$1,200. Minimum \$500.	Amount determined by Board. Maximum \$2,500.00 Minimum \$1,500 in case of major injuries.	50% difference in earnings.
4. Temporary total disability.....	55% of wages..... Minimum \$5.00. Maximum 55% of \$1,200.00.	55% of wages..... Minimum \$6.00. Maximum 55% of \$1,500.00.	50% of wages..... Minimum \$4.00. Maximum 50% of \$1,000 + $\frac{1}{2}$ of balance up to \$500
5. Temporary partial disability.....	55% of difference in earning power.	55% of difference in earning power.	50% of wages..... Minimum \$4.00. Maximum 50% of \$1,000.00 + $\frac{1}{4}$ of balance up to \$500.
6. Medical aid.....	Full expense for 30 days taken from accident fund.	Full expenses taken from accident fund.	None.....
7. Special medical aid.....	Full expenses from accident fund.	Full expenses from accident fund.	None.....
8. Contribution to accident fund.....	Employer.....	Employer.....	None.....
9. Contribution to medical aid fund.....	Employer.....	Employer.....	None.....
10. Administration.....	Board of three.....	Board of three.....	Circuit and supreme Court.
11. Waiting period.....	7 days — if longer pay from date.	7 days — if longer pay from date.	7 days.....
12. Insurance.....	Compulsory state...	Compulsory state...	Employer individually responsible
13. Election by employer.....	Any industry not within scope of Act, unless specifically excluded.	Any industry not within scope of Act, unless specifically excluded.	None.....
14. Common law.....	None.....	None.....	All those not coming under Act.
15. Injuries covered.....	Which arise out of and in course of employment.	Which arise out of and in course of employment.	Which arise out of and in course of employment.
16. Accident prevention.....	Rules made by any association of employees may be approved by board.	None.....	None.....
17. Time limit for claim.....	12 months.....	12 months.....	12 months.....
18. Method of paying.....	By board.....	By board.....	By employer monthly or regular pay day.
19. Exemptions.....	Travellers..... Casual Labourers, Out Workers, Police & Firemen, Farmers, Domestic Servants, Employer's Family, Employer.....	Travellers..... Out Workers, Domestic Servants, Farmers, Clerks, Employer's Family, Police & Firemen, Employer.....	Farmers..... Employees on sailing vessels. All employees earning more than \$1,500 per year.
20. Reports.....	Doctor, Employee.	Doctor, Employee.	Employer to Factory Inspector.



# LABOUR IN CANADA

## COMPENSATION LEGISLATION.

Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
\$125.00.....	\$150.00.....	Maximum \$2,500...	\$100.00.....	\$100.00.....
\$40.00 per month.....	\$30.00 per month...		\$35.00 per month.	\$35.00 per month.
\$10.00 each up to 16 years.	\$7.50 each up to 16 years.		\$7.50 up to 16 years.	\$7.50 up to 16 years.
\$15.00 if children only..			Maximum \$65.00...	Maximum \$65.00.
\$100.00 in addition.			\$12.50 if children only.	
66⅓% for life.....	66⅓%.....	Maximum \$2,500...	55% of wages.....	55% maximum based on \$2,000.
	Minimum \$15.00.			
66⅓% difference in earnings.	66⅓% difference in earnings.	Maximum \$5,200...	55% of wages.....	55% difference in earnings.
66⅓% of wages, payable only so long as disability lasts.	66⅓% of wages....	Maximum \$2,500...	55% of wages.....	55% of wages.
66⅓% of difference in earning power, earnings not to exceed \$2,000.	66⅓% of difference in earnings.	Not specified.....	maximum 55% of \$2,000.	Minimum \$5.00.
Full expenses taken from accident fund.	66⅓% of difference in earnings.	Not specified.....	55% of difference in earning power where wage is less than 90%.	55% of difference in earning power.
	Minimum \$6.00.		Full expenses taken from medical aid fund.	Full expenses taken from medical aid and accident fund.
Full expenses from accident fund.	Full expenses taken from accident fund.	Not specified.....	Full expenses taken from accident fund.	Full expenses from medical aid and accident fund.
Employer.....	Full expenses from accident fund.	Not specified.....	Employer.....	Employer.....
Employer.....	Employer.....	None.....	Employee.....	Employee and employer.
Board of three.....	Employer — from accident fund.	None.....	Board of three.....	Board of three.
7 days —if longer pay from that date.	Board of three.....	District Court.....	3 days, if longer than 10 days, pay from date.	3 days.
Compulsory state.....	3 days.....	7 days.....	Compulsory state..	Compulsory state.
Election only where 6 or less are employed by either employer or employee, unless specifically excluded.	Compulsory state..	Employer individually responsible.	Any industry not within scope of Act. With approval of 50% of employees, unless specifically excluded.	Any industry not within scope of Act, unless specifically excluded.
None.....	Any industry not within scope of Act.	None.....	None.....	None.
Which arise out of and in course of employment, and in fortuitous events.	None.....	Yes, both.....	Which arise out of and in course of employment.	Which arise out of and in course of employment, and in fortuitous events.
Regulations made by groups of employers, work approved by Board.	Which arise out of and in course of employment.	None.....	By Board.....	By Board.
At once, 6 months or more.	None.....	6 months.....	At once, 3 months or more.	12 months.
By Board or order of Board.	As soon as practical.	By employer, by order of Court.	By Board.....	By Board.
Out Workers.....	By Board.....	Farmers, Employees other than those engaged in manual labour earning over \$2,000.	Casual Labourers, Out Workers, Farmers, Domestic Servants, Railwaymen except running trades.	Travellers, Casual Labourers, Farmers, Domestic Servants, Clerks, Employer's family.
Domestic Servants, Farmers, Executive Officers,	Casual Labourers, Out Workers, Farmers, Domestic Servants, Executive Officers.	Employer to Government.	Employer.....	Employer, Doctor, Employee.
Employer.....	Employer.....		Doctor.	
Doctor, Employee.	Doctor.			

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

The Factory Acts which deal with age of employment and hygienic measures vary materially in the different provinces. The scope of each and the measures with which it deals are summarized as follows:—

SCHEDULE OF FACTORY ACT LEGISLATION

Provinces	Name of definition of law	Scope of act	Age of employment of children, boys and girls	Hours of work, children and females	Health and safety measures
Alberta.....	The Factories Act, 1917.	All factories, shops and office buildings, premises determined by schedule "A" where power is used for preparing or manufacturing purposes.	Age of admission from 15 years. No provision for unhealthy occupations.	10 hours per day	Health and safety measure provided for in all provinces.
British Columbia.	The British Columbia Factories Act.	All premises where mechanical power is used or where three persons are employed, or all other premises that may be brought under the law by Order-in-Council.	15 for girls. . . . 14 for boys.	8 hours or 48 per week.	Health and safety measure provided for in all provinces.
Manitoba.....	The Manitoba Factories Act.	All premises where mechanical power is used for manufacturing purposes, or where three persons are employed, or other premises that may be brought under the law by Order-in-Council.	15 for girls. . . . 14 for boys.	9 hours or 54 a week.	Health and safety measure provided for in all provinces.
New Brunswick..	The New Brunswick Factories Act.	Building, office or place in which persons are employed in handicraft. Building under erection, temporary workshop or shed is exempt.	14 for boy or girl.	10 hours a day and 60 a week.	Health and safety measure provided for in all provinces.
Nova Scotia...	Nova Scotia Factories Act.	Covers establishments in which persons are employed where manufacturing is being carried on where power is used, or any premises brought under by Order-in-Council.	14 for girls and boys, except for some occupations.	9 hours, 54 per week.	Health and safety measure provided for in all provinces.
Ontario.....	The Factory, Shop and Office Building Act.	Building, workshop, structure or premise of the description mentioned in Schedule "A" or any premise proclaimed by Order-in-Council. All premises where mechanical power is used or where five persons are employed.	14 for boys and girls, 16 for boys, 18 for girls, in unhealthy industries.	10 hour day and 60 week. No night work allowed.	Health and safety measure provided for in all provinces.
Saskatchewan.	The Saskatchewan Factories Act of 1909.	All premises where mechanical power is used, where three are employed or all other premises brought under the law by Order-in-Council.	14 for boy, 15 for girl.	48 hour week...	Health and safety measure provided for in all provinces.
Quebec.....	Industrial Establishments Act of Quebec.	All mills, factories, work shops, except shops where persons of one family, and do not operate with mechanical power. Mines are also exempt.	14 for boys and girls, 16 for boys and 18 for girls in dangerous occupations.	10 hours per day 60 week. Textile operatives 55 hour week. No night work allowed.	Cleanliness light, air space, ventilation and safety mechanical appliances and in case of fire. Special provision in connection with dangerous or unhealthy occupation.

## LABOUR IN CANADA

### §9. WAGES AND WORKING HOURS

While there is no Dominion legislation respecting hours of labour, most provinces have enacted legislation covering this point for certain industries. In many occupations an eight-hour day and in some cases a 44-hour week has been obtained by working agreements between the employers and labour organizations, and in British Columbia the eight-hour work-day has been widely established either in this way or by law. In the mining industry the work-day is limited by law or practice to eight hours in practically all provinces, and in many important industries wages and hours are determined by agreements between the unions and the employers.

The wage rate in some industries is affected by local conditions and is generally higher in the western provinces than in the east. This is chiefly attributable to the higher cost of living in the west, though the tendency during recent years is towards equality in cost of living and in wage rates.

The wage scales in the railway trades are fixed by agreement between the railway operators and the unions, and the agreements have been for several years almost identical with those obtaining in the United States. In general, wages advanced rapidly during the high-pressure period of 1917-19, when labour was scarce and food prices mounted fast. The situation in Canada in this respect resembled that found in the United States, Britain and elsewhere. The cost of living from 1914 to 1919 increased in round figures by about 100 per cent and the wage rate on an average in almost the same degree. During the last year substantial declines from these levels have occurred.





## WATER POWERS AND THEIR INDUSTRIAL IMPORTANCE

*[The material for this chapter supplied by the Dominion Water-Power Branch, Department of the Interior. The Table of Average Monthly Bills is taken from Bulletin of Hydro Electric Commission of Ontario]*



## CHAPTER V

### WATER-POWERS AND THEIR INDUSTRIAL IMPORTANCE

If any doubt previously existed as to the vital importance of water-power to the industrial development of a country, the conditions brought on by the war plainly demonstrated its unquestioned value as compared with other known sources. Its superiority rests on a number of factors, of which the chief are:—

1. Once the power development has been completed, the production of energy is comparatively independent of labour, transportation and allied problems.
2. Cheapness of operation.
3. The wide distribution of power sites and the ease with which hydro-electric energy may be transmitted allows industries using this kind of power to locate where other conditions, such as raw material, transportation, etc., are favourable.

The above benefits, particularly the first, were soon recognized under war conditions throughout the world, when the intensive production of war material demanded every available unit of energy. This has further been accentuated by the apparently permanent substantial increase in the cost of coal, which may be regarded as the most important competitor of water-power in energy production. As a result, various countries not only extended every effort to further development of water-powers, but also devoted much attention to estimates of available possibilities, so that there now exist fairly reliable figures for many parts of the world.

#### §1. WATER-POWERS OF THE BRITISH EMPIRE

The table following gives the best available information on the water-power resources of the British Empire. There are included only those British possessions known to have extensive water resources, while those not listed cover a wide area and include a large population.

# CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

## MAIN WATER-POWERS OF THE BRITISH EMPIRE<sup>1</sup>

Country	Area in sq. miles	Population	Horse-Power	
			Available	Developed or under construction
1. United Kingdom.....	121,630	45,516,000	1,500,000	210,000
2. India.....	1,669,000	302,885,000	very large <sup>2</sup>	181,400
3. Burma.....	230,840	12,115,000	7,000,000	.....
4. Canada.....	2,000,000 <sup>3</sup>	9,030,000	18,255,316 (min.) 32,075,998 (max.)	2,470,580 <sup>4</sup> (installed)
5. Newfoundland.....	42,730	252,800	.....	60,000
6. Australia.....	2,974,580	4,455,000	1,400,000	100,000
7. New Zealand.....	103,581	1,250,000	3,801,800	202,400
8. Union of South Africa.	490,000	5,973,000	699,668	.....
9. British Guiana.....	89,480	313,900	3,000,000	.....
10. British Honduras....	8,598	42,300	.....	.....
11. New Guinea, British.	90,540	201,400	10,000,000	.....
12. New Guinea, Former German.....	70,000	230,000	7,000,000	.....

<sup>1</sup>The total for the British Empire was estimated by the Water-Power Committee of the Conjoint Board of Scientific Societies, England, July, 1918, at between 50 and 70 million h.p.

<sup>2</sup>1,774,000 h.p. has been investigated.

<sup>3</sup>Portion of area likely to be developed in the next fifty years.

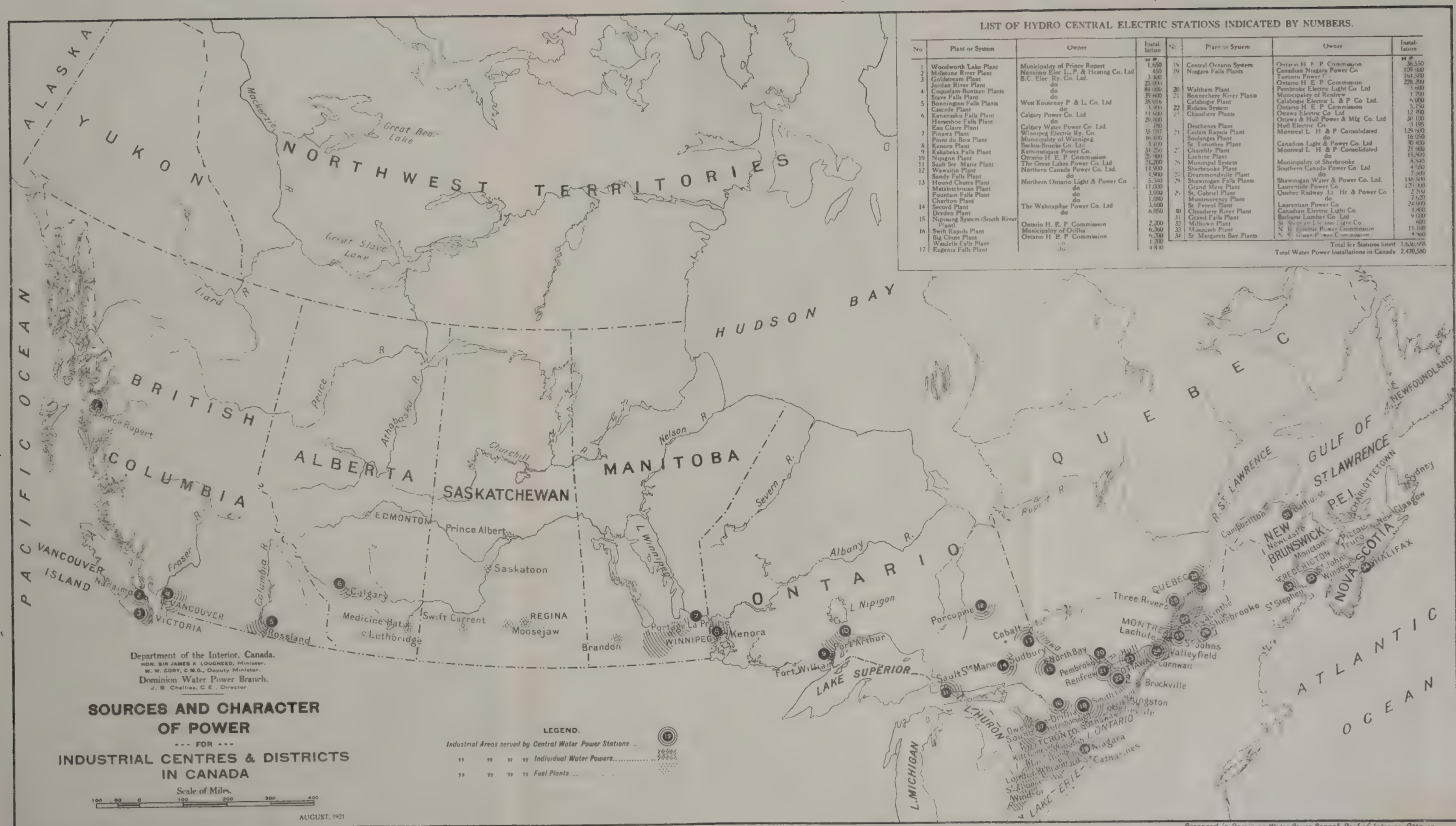
<sup>4</sup>New developments completed or under construction in 1920 represent approximately 650,000 h.p.

### §2. WATER-POWERS OF CANADA

In Canada it has been long recognized that special attention should be devoted to water-power resources. The efforts in this direction have had most satisfactory results in giving the Dominion an outstanding position in the British Empire with regard to water-power. This position is fully emphasized by Canada's most efficient hydro-electric supply. *Practically all industrial centres of the Dominion are supplied with electric energy derived from water-power with ample reserves located within easy transmission distance.* In certain parts, where water-power is not available, nature has generously supplied fuel reserves of coal, gas or oil. In addition to its enormous possibilities and the large amount already utilized, the advanced methods followed in investigating its water-powers and in classifying the available data have caused Canada to be recognized as the Empire's pioneer in this respect.

While many countries have estimated their water-power possibilities, in most cases the figures submitted are admittedly only very approximate and are not qualified as to exact conditions represented; that is, whether they are based on minimum flow of rivers, the use of storage reservoirs, the continuous or intermittent use of power and such similar considerations. The early beginning and intensive work carried on by the





LIST OF HYDRO CENTRAL ELECTRIC STATIONS INDICATED BY NUMBERS.

No.	Plant or System	Owner	Total Horse Power	% Water Power	Plant or System	Owner	Total Horse Power	
1	Woodworth Lake Plant	Municipality of Prince Rupert	1,600	100	18	Central Ontario System	Ontario H. E. P. Commission	35,300
2	McNown River Plant	Nelson River P. & A. Trading Co. Ltd.	1,500	100	19	Nagara Falls Plant	Canadian Niagara Power Co.	130,000
3	Goldstream Plant	B.C. Elec. Ry. Co. Ltd.	1,000	100	20	Ontario Power Co.	Ontario H. E. P. Commission	228,000
4	Chapin River Plant	do	2,000	100	21	Ontario Light & Power Co. Ltd.	Ontario H. E. P. Commission	1,700
5	Lower Falls Plant	do	20,000	100	22	Barren River Plant	Manitoba Electric Co. Ltd.	6,000
6	Upper Falls Plant	do	20,000	100	23	Calabogie Plant	Manitoba Electric Co. Ltd.	2,500
7	Canoe Plant	West Kootenay P. & L. Co. Ltd.	1,000	100	24	Edison Station	Ontario H. E. P. Commission	17,000
8	Kerrville Falls Plant	Colony Power Co. Ltd.	1,000	100	25	Chandlers Falls	Ontario H. E. P. Commission	30,000
9	Hemlock Falls Plant	Colony Water Power Co. Ltd.	1,000	100	26	Douglas Plant	Ontario H. E. P. Commission	12,000
10	See-Clay Plant	Western Electric Ry. Co.	1,000	100	27	Edison River Plant	Ontario H. E. P. Commission	12,000
11	Pond du Bon Plant	Municipality of Winnipeg	1,000	100	28	St. Lawrence Plant	Canadian Light & Power Co. Ltd.	18,000
12	Kapuskasing Plant	St. Lawrence Co. Ltd.	1,000	100	29	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
13	Northwest Plant	Kapuskasing Power Co.	1,000	100	30	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
14	Northwest Plant	Ontario H. E. P. Commission	1,000	100	31	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
15	Northwest Plant	Manitoba Electric Co. Ltd.	1,000	100	32	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
16	Northwest Plant	Manitoba Electric Co. Ltd.	1,000	100	33	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
17	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	34	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
18	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	35	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
19	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	36	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
20	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	37	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
21	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	38	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
22	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	39	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
23	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	40	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
24	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	41	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
25	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	42	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
26	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	43	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
27	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	44	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
28	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	45	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
29	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	46	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
30	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	47	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
31	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	48	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
32	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	49	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
33	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	50	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
34	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	51	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
35	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	52	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
36	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	53	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
37	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	54	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
38	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	55	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
39	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	56	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
40	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	57	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
41	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	58	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
42	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	59	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
43	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	60	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
44	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	61	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
45	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	62	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
46	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	63	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
47	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	64	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
48	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	65	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
49	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	66	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
50	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	67	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
51	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	68	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
52	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	69	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
53	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	70	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
54	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	71	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
55	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	72	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
56	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	73	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
57	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	74	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
58	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	75	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
59	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	76	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
60	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	77	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
61	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	78	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
62	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	79	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
63	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	80	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
64	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	81	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
65	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	82	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
66	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	83	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
67	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	84	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
68	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	85	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
69	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	86	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
70	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	87	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
71	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	88	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
72	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	89	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
73	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	90	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
74	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	91	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
75	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	92	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
76	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	93	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
77	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	94	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
78	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	95	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
79	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	96	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
80	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	97	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
81	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	98	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
82	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	99	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
83	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100	100	Chandler Plant	Manitoba Electric Co. Ltd.	11,000
84	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100				
85	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100				
86	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100				
87	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100				
88	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100				
89	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100				
90	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100				
91	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100				
92	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100				
93	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100				
94	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100				
95	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100				
96	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100				
97	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100				
98	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100				
99	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100				
100	Edison Falls Plant	Manitoba Electric Co. Ltd.	1,000	100				

Total for Stations listed 1,000,000  
 Total Water Power Installations in Canada 2,400,000



## WATER-POWERS AND THEIR INDUSTRIAL IMPORTANCE

Dominion Water Power Branch of the Department of the Interior has recently made it possible to present to the public far more definite figures relating to Canada. In the table below the available power is given under two heads properly qualified as to conditions. The "ordinary minimum flow" is based on the averages of the minimum flow for the lowest two consecutive seven-day periods in each year, over the period for which records are available. The "estimated flow for maximum development" is based upon the continuous power indicated by the flow of the streams for six months in the year. This estimated maximum development is based upon the assumption that it is good commercial practice to develop wheel installation up to an amount the continuance of which can be assured during six months of the year, on the assumption that the deficiency in power during the remainder of the year can be profitably provided for from storage or by the installation of fuel power plants as auxiliaries. It represents a fair estimate of the maximum hydraulic power available, as distinct from the ordinary minimum power available. Thus the second table shows that for power sites upon which fairly definite data are available throughout the Dominion, the total possibilities aggregate 18,255,000 horse-power under conditions of "ordinary minimum flow," while based on dependable flow for at least six months of the year the total is 32,076,000 horse-power.

### AVAILABLE AND DEVELOPED WATER-POWER IN CANADA

Province	Available 24-horse-power at 80% efficiency		Turbine installation h.-p.
	At ordinary minimum flow  h.-p.	At estimated flow from maximum development (dependable for 6 months) h.-p.	
1	2	3	4
British Columbia.....	1,931,142	5,103,460	304,535
Alberta.....	475,281	1,137,505	32,492
Saskatchewan.....	513,481	1,087,756	.....
Manitoba.....	3,270,491	5,769,444	83,447
Ontario.....	4,950,300	6,808,190	1,052,048
Quebec.....	6,915,244	11,640,052	925,972
New Brunswick.....	50,406	120,807	21,180
Nova Scotia.....	20,751	128,264	35,774
Prince Edward Island.....	3,000	5,270	1,933
Yukon and Northwest Territories.....	125,220	275,250	13,199
	18,255,316	32,075,998	2,470,580

## CANADA A FIELD FOR BRITISH BRANCH INDUSTREIS

The last column shows the latest figures on the total capacity of turbines actually installed at the various sites which have thus far been developed.

The figures listed in columns 2 and 3 of the table (p. 69) represent 24-hour power and are based upon rapids, falls and power sites of which the actual existent drop, or the head possible of concentration, is definitely known or at least well established. Innumerable rapids and falls of greater or lesser power capacity are scattered along rivers and streams from coast to coast which are not as yet recorded and which will only become available for tabulation as more detailed survey work is undertaken and completed. This is particularly true in the more unexplored northern districts. Nor is any consideration given to the power concentrations which are feasible on rivers and streams of gradual gradient, where economic heads may be created by the construction of power dams, excepting only at such points as definite studies have been carried out and the results made matters of record.

The figures in column 4 represent the actual water-wheels installed throughout the Dominion. These figures should not be placed in direct comparison with the available power figures in columns 2 and 3 for the purpose of deducting therefrom the percentage of the available water-power resources developed to date. The actual water-wheel installation throughout the Dominion averages 30 per cent greater than the corresponding maximum available power figures calculated as in column 3. The figures in the table, therefore, indicate that the *at present recorded water-power resources* of the Dominion will permit of a turbine installation of 41,700,000 horse-power. In other words, the present turbine installation represents only 5.9 *per cent* of the present recorded water-power resources.

The figures quoted may be said to represent the *minimum water-power possibilities* of the Dominion.

As illustrative of this, the detailed analyses which have been made of the water-power resources of the provinces of New Brunswick and Nova Scotia have disclosed most advantageous reservoir facilities for regulating stream flow, and it is estimated that the two provinces possess within their respective borders 200,000 and 300,000 commercial horse-power. These figures provide for a diversity factor between installed power and consumers' demands.



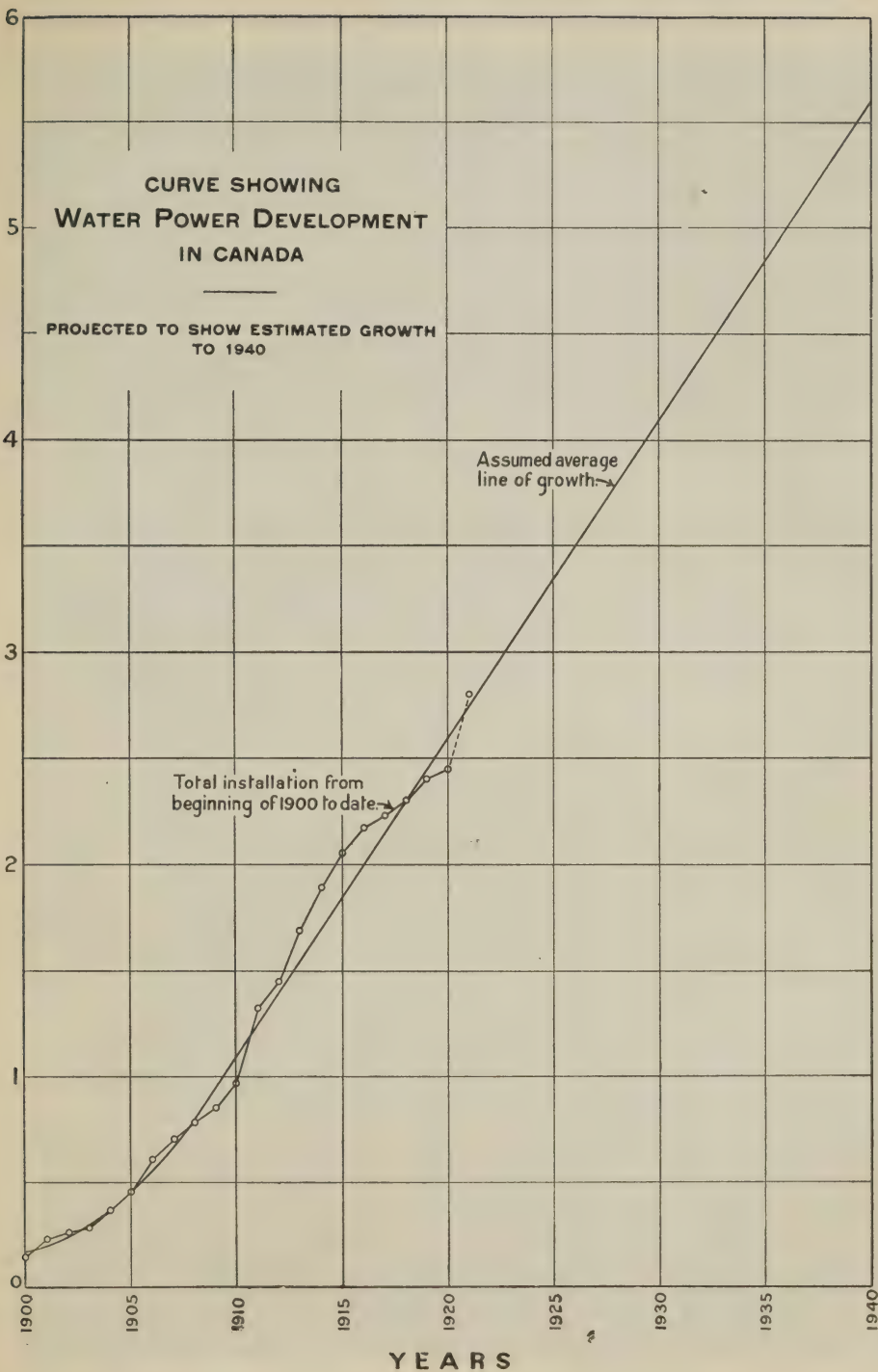
**CURVE SHOWING  
WATER POWER DEVELOPMENT  
IN CANADA**

PROJECTED TO SHOW ESTIMATED GROWTH  
TO 1940

MILLION HORSEPOWER

Assumed average  
line of growth

Total installation from  
beginning of 1900 to date



## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

### §3. WATER-POWER COMPARED WITH COAL

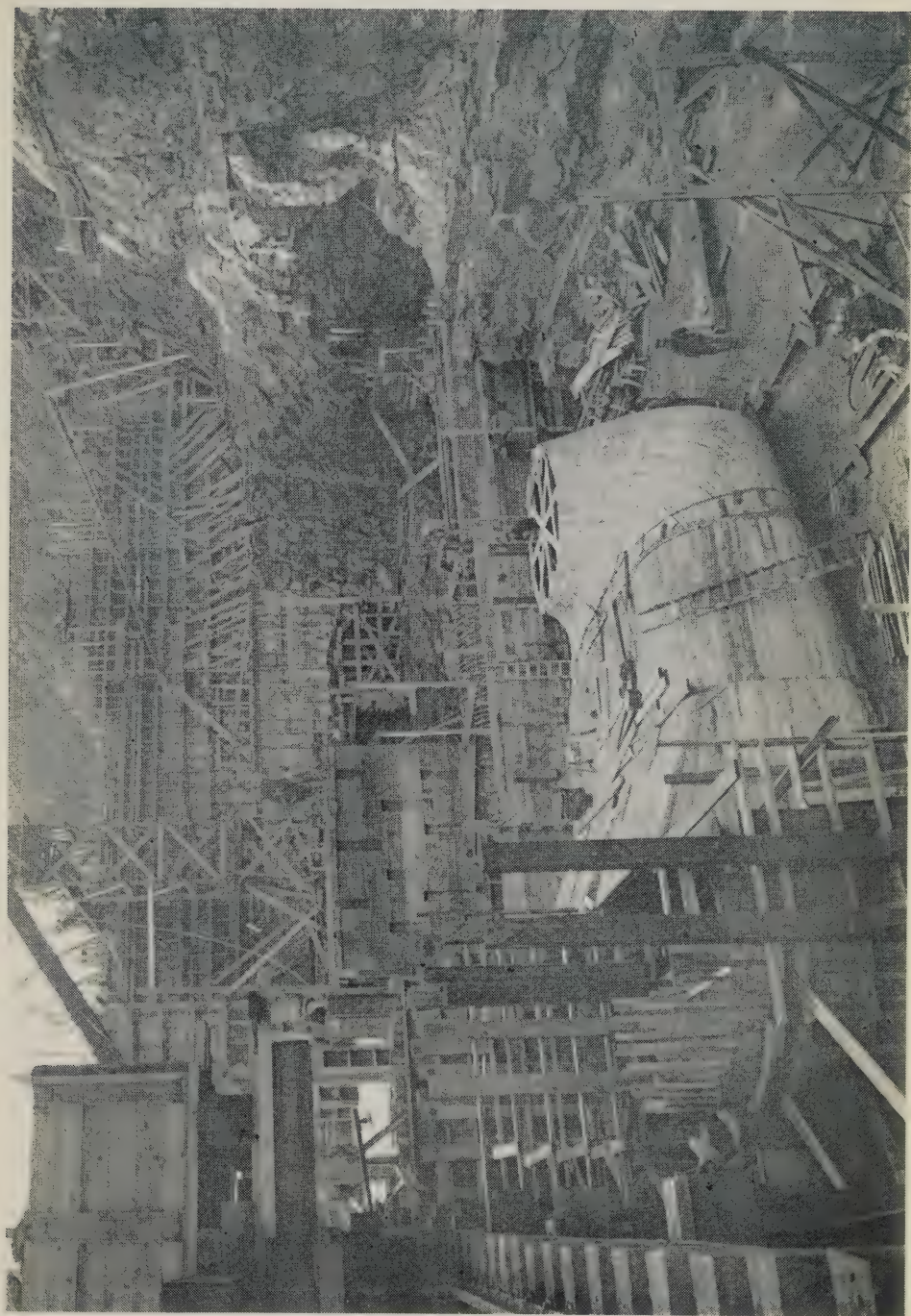
Until very recently coal was considered the most desirable source of power, but advances in scientific hydraulic design and the ease with which hydro-electric energy is transmitted have each contributed to place water-power in a more advantageous position. While Canada's coal resources are very large, they are chiefly located in the extreme western and eastern portions of the Dominion, so that the present and future industrial development of Canada is to a large extent dependent on its water-powers. In this connection certain data showing how water-power has replaced coal, and can further do so, may be of interest. A fair figure representing the amount of coal equivalent to one horse-power of installed water-power is 9 tons per year; on this basis the following figures show the increasing amount of coal saved in Canada from year to year by the use of water-powers:—

Year	Developed <sup>1</sup> Water-Power Horse-Power Installed	Coal <sup>2</sup> Equivalent
		Tons
1907.....	700,000	6,300,000
1908.....	800,000	7,200,000
1909.....	880,000	7,920,000
1910.....	980,000	8,820,000
1911.....	1,320,000	11,700,000
1912.....	1,460,000	13,140,000
1913.....	1,700,000	15,300,000
1914.....	1,900,000	17,100,000
1915.....	2,040,000	18,360,000
1916.....	2,160,000	19,440,000
1917.....	2,240,000	20,160,000
1918.....	2,320,000	20,880,000
1919.....	2,400,000	21,600,000
1920.....	2,459,200	22,133,000

(<sup>1</sup>) Approximate figures based upon and including only those wheels now in operation.

(<sup>2</sup>) Taken at 9 tons per horse-power-year, as this is horse-power installed and exceeds that actually "in use".

The developed water-power per capita in Canada is 194 per cent greater than in the United States, and the coal used per capita in the United States is 50 per cent greater than in Canada. This 50 per cent of the present coal consumption of Canada is 17,613,000 tons, equal, at the average wholesale price of \$8.32, to \$146,500,000 per annum, and this represents the sum that would necessarily be spent annually in importing coal if the



CONSTRUCTION WORK (DRAFT TUBE) ON QUEENSTON-CHIPPewa DEVELOPMENT







## WATER-POWERS AND THEIR INDUSTRIAL IMPORTANCE

water-power development did not exist. This applies to the present time. It will be greater in the future, both because of the increase in consumption and the probable increase in the average cost of coal.

The consideration of Canada's water-power potentialities in connection with the amount of imported coal which they can replace in the future industrial development of the country is also most interesting. This is particularly marked in that portion of the Dominion where no coal is found. The following table summarizes these conditions. For this purpose the coal equivalent of water-power has been assumed as 10 tons per year per horse-power or 15 tons on a 50 per cent load factor; the equivalent in this case being based, not on the possible installation, but on the minimum hydraulic power available continuously for twenty-four hours per day.

	Minimum 24-hour Water-Power Available	Annual Coal Equivalent
	h.-p.	tons
Quebec.....	6,915,244	103,730,000
Ontario.....	4,950,300	74,250,000
Manitoba.....	3,270,491	49,060,000
Total.....	15,136,035	227,040,000

Recent returns show that in the "acute" fuel area considered in the above table, *94.5 per cent of the coal used is imported*, so that Canada's water-powers may be looked upon as a future means of keeping within its borders each year the money value of over 200,000,000 tons of coal.

### §4. THE CENTRAL STATION SUPPLY SYSTEM

While many industries, both large and small, are operated directly from water-power, probably the greater portion receive their supply indirectly through the use of hydro-electric energy supplied by what are known as central stations. That Canada is well supplied with electric energy is fully demonstrated by an analysis of conditions in this regard recently prepared by the Water Power Branch in co-operation with the Dominion Bureau of Statistics. This includes only the central electric station industry proper or stations which sell or distribute electrical energy, as distinct from industrial organizations generating the energy for their own use. The following summary shows the number of generating units in Canada, with their total capacity grouped according to the

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

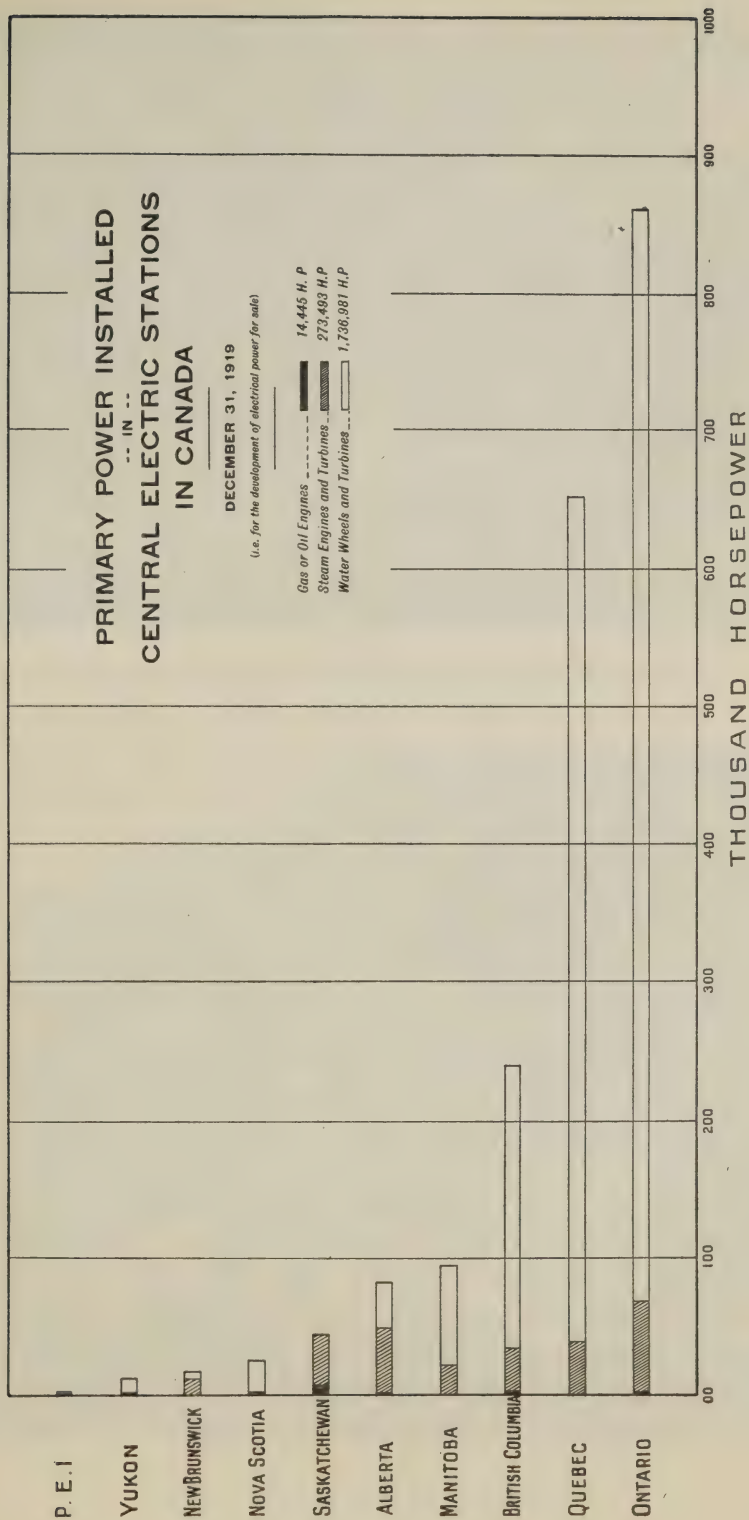
kind of prime movers, and brings out the remarkable predominance of water-power, which represents no less than 91.1 per cent of the total capacity in main plants.

Water-power.....	610 units aggregating	1,736,981 h.-p.
Steam.....	236                   “	155,933   “
Gas and oil.....	136                   “	14,222   “
Auxiliary steam, gas and oil....	64                   “	117,783   “

The aggregate capacity of all primary-power machines reported is therefore 2,024,919 horse-power, of which 1,907,136 horse-power is installed in main plants and 117,783 horse-power in auxiliary or stand-by plants.

In regard to the ownership of these stations, both private and public control are well represented. Of the total 493 generating plants in Canada, 306 are commercial and 187 municipal or under public ownership.

The proportion and capacity of these central stations is shown in the graph on the opposite page.



## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

### §5. POWER IN THE VARIOUS PROVINCES

#### (a) BRITISH COLUMBIA

In British Columbia water-power is very generously distributed. It is essentially a mountainous province and in some cases the high head available, in others the abundant rainfall, is responsible for the existence of many desirable water-power sites. The province has been only partially explored, and a considerable amount of power may yet be disclosed in the northern portion. For ordinary minimum flow the total is estimated at 1,931,142 horse-power; maximum development dependable for six months, 5,103,460 horse-power. The present water-power development comprises an installed capacity of 304,535 horse-power, mainly for the hydro-electric supply of the larger cities, while mining and allied operations and pulp and paper industries also account for a large amount.

Although British Columbia is well supplied with coal, the various water-power sites are so well distributed, particularly along the Pacific coast, that a steady progress in power development can be looked for in the future.

VANCOUVER—We find all the industrial centres well provided for as regards hydro-electric energy. Vancouver district receives its supply from three hydro-electric stations; the two Coquitlam-Buntzen plants of the British Columbia Electric Railway Company, with a total capacity of 84,000-horse power, are located some 16 miles from Vancouver, while a continuous service is further assured by a 17,500-horse power auxiliary steam plant in the city. The company's other hydro plant for this district is located on the Stave river, thirty-five miles east of Vancouver, and has a capacity of 39,600 horse-power, the energy being transmitted at 60,000 volts.

VICTORIA—The British Columbia Electric Railway Company also supplies Victoria, the energy in this case being obtained principally from their Jordan river plant, located forty miles distant, with a capacity of 25,000 horse-power. This system also has an emergency steam plant of 6,000-horse power capacity, while another hydro plant of 3,400 horse-power, located on the Goldstream river, is also used when required.

NANAIMO—Nanaimo's hydro-electric supply is derived from a 450-horsepower plant on the Millstone river in the city. A steam plant of the same capacity provides an auxiliary service.

PRINCE RUPERT—Prince Rupert has a municipal hydro plant of 1,650 horse-power located at the foot of Woodworth lake, five and a half miles distant from the city. The system also has a 480 horse-power auxiliary steam plant.





POWER HOUSE NO. 1. COQUITLAM-BUNTZEN DEVELOPMENT, LAKE BUNTZEN, B.C.  
BRITISH COLUMBIA ELECTRIC RAILWAY COMPANY



POWER HOUSE NO. 2. COQUITLAM-BUNTZEN DEVELOPMENT, LAKE BUNTZEN, B.C.  
BRITISH COLUMBIA ELECTRIC RAILWAY COMPANY



## WATER-POWERS AND THEIR INDUSTRIAL IMPORTANCE

INTERIOR CITIES—In the interior, the city of Nelson and the Kootenay district are well provided for. The former is supplied from a municipal hydro plant of 3,400 horse-power at Upper Bonnington fall, Kootenay river, the energy being transmitted eleven miles. The large mining demands of the Kootenay district are supplied by the system of the West Kootenay Power and Light Company, Limited, which obtains its energy from three hydro plants, one at Lower Bonnington fall, Kootenay river, of 4,016 horse-power; the second at Upper Bonnington fall of the same river, of 34,000 horse-power; the third at Cascade on Kettle river, of 3,900 horse-power. The transmission system covers an extensive area operating at 60,000 and 110,000 volts and extending from Nelson in the east to Copper Mountain in the west.

### (b) THE YUKON

No systematic examination of this territory has yet been made, but it is estimated that a total of 100,000 horse-power is available, of which 13,199 horse-power has been developed. This is used principally for the operation of gold dredges, but one of the two companies developing power supplies the city of Dawson. Should future mineral discoveries require it, other sites will no doubt be found and developed.

### (c) ALBERTA

The water-power possibilities of this province are found principally in the northern portion. In the south they are restricted to the mountain or western side, the more important being found on the Bow river. The total available water-power for Alberta is estimated at 475,281 horse-power, based on the minimum flow of rivers and at 1,137,505 horse-power for a maximum development dependable for six months. A large portion of these potentialities is found in the Fort Smith rapids of the Slave river, while many possible sites are also found on the Athabaska river.

CALGARY—The relative scarcity of water-power in the south, coupled with the great abundance of local coal, has naturally limited hydraulic development, and we find a total installation of only 32,492 horse-power, almost all on the Bow river and utilized for the hydro-electric supply of Calgary. The two plants of the Calgary Power Company, used for this purpose, have a total capacity of 31,600 horse-power, and are located at Horseshoe fall and Kananaskis fall respectively. The energy is transmitted fifty miles and is distributed under municipal control. The city also operates a 15,000 horse-power steam plant. Electric energy is also supplied by the Calgary Water Power Company, from a local hydro plant of 780 horse-power and a steam plant of 2,250 horse-power.



## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

EDMONTON—The power requirements of Edmonton are entirely supplied from steam. The municipality has a 14,520-horsepower plant.

LETHBRIDGE AND MEDICINE HAT—Both Lethbridge and Medicine Hat are also supplied under municipal control from steam. The former has a 4,750-horsepower plant, while Medicine Hat has one of 4,400 horsepower, where natural gas is used as fuel.

### (d) SASKATCHEWAN

The hydraulic resources of this province are located almost entirely to the north of the settled portion. Many attractive sites are available which in aggregate form an appreciable amount; these are found principally on the Churchill, Reindeer, Black, and Saskatchewan rivers. For the ordinary minimum flow the total estimate is placed at 513,481 horsepower, while for maximum development dependable for six months, 1,087,756 horse-power would be available.

Owing to the absence of economic water-power in the present populated area of the province, all industrial centres are supplied with electric energy from efficient steam plants under municipal control. Regina has a steam-turbine and engine plant of 16,500 horse-power; the capacity of the Saskatoon plant is 8,000 horse-power, and that of the Moose Jaw plant, 8,050 horse-power.

### (e) MANITOBA

A large portion of the water-powers of this province is found on its northern streams, but the Winnipeg river and other tributaries of lake Winnipeg also afford a generous supply to the eastern part of southern Manitoba. The total available water-power for the province is estimated at 3,270,491 horse-power, based on the minimum flow of rivers, and at 5,769,444 horse-power for a maximum development dependable for six months. The outstanding power possibilities are located on the Nelson river, while the Churchill and Saskatchewan are also noteworthy. The Winnipeg river, however, with its economic sites, its exceptional reservoir facilities, and its favoured location at present occupies the most important position among the power rivers of the province. Its power possibilities total 450,000 horse-power, under regulated flow, all within seventy miles of Winnipeg, and all capable of most economic development. The total water-power development in the province includes an installed capacity of 83,447 horse-power, almost all on the Winnipeg river for the hydro-electric supply of Winnipeg and an extensive surrounding district. The energy supply is under two distinct organizations; the municipal system has a 46,400-horsepower hydro plant which is being increased to 67,100



## WATER-POWERS AND THEIR INDUSTRIAL IMPORTANCE

horse-power at Point du Bois, 77 miles north east of the city, while the Winnipeg Electric Railway Company, Limited, has a 35,597-horsepower hydro plant at Pinawa, 60 miles from the city. The latter company also has an auxiliary steam equipment in the city with a total capacity of 15,000 horse-power. The city of Winnipeg system, through the Manitoba Power Commission transmission system, also extends to a number of smaller municipalities and to Portage la Prairie. Here hydro-electric energy is supplied under municipal control, while a 900-horsepower auxiliary steam plant is held in reserve. Brandon is supplied with electric energy by the Canada Gas and Electric Corporation, mainly from a 3,206-horsepower steam plant and also from a water-power plant of 1,000-horsepower located at the mouth of the Minnedosa river.

### (f) ONTARIO

The water-power potentialities of this province are very large and have the advantage of being well distributed throughout its area. As is the case in other parts of Canada, their full extent has not yet been definitely ascertained, particularly in northern Ontario. The total of the known possibilities amounts to 4,950,300 horse-power under conditions of minimum flow, and to 6,808,190 horse-power for maximum development dependable for six months in the year.

The Niagara and St. Lawrence powers are the outstanding sources both on account of large capacities and the unrivalled natural situation in the most thickly populated portion of the Dominion. On both streams Ontario shares her power with the United States. At Niagara, even with the limited diversion allowed under the International Boundary Treaty, each country is entitled to over 1,000,000 horse-power, admitting the use of the total descent in the falls and rapids below as is being carried out in the latest power undertakings. Canada's share of the St. Lawrence power in Ontario has been estimated at 700,000 horse-power and no appreciable amount is yet being utilized on the Canadian side.

Another river offering very large possibilities is the Ottawa, forming a large part of the boundary between Ontario and Quebec, the power of which is divided between the two provinces. A total estimate for this river has recently been placed at over 1,000,000 horse-power, of which Ontario's share would be some 450,000 horse-power. Additional information is gradually becoming available on the rivers of the more northerly portion of Ontario indicating a great number of moderately large power sites. Many of these are found on the streams of the James Bay slope and have become valuable through their proximity to the Canadian National Railway. The most recent information on the developed water-power

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

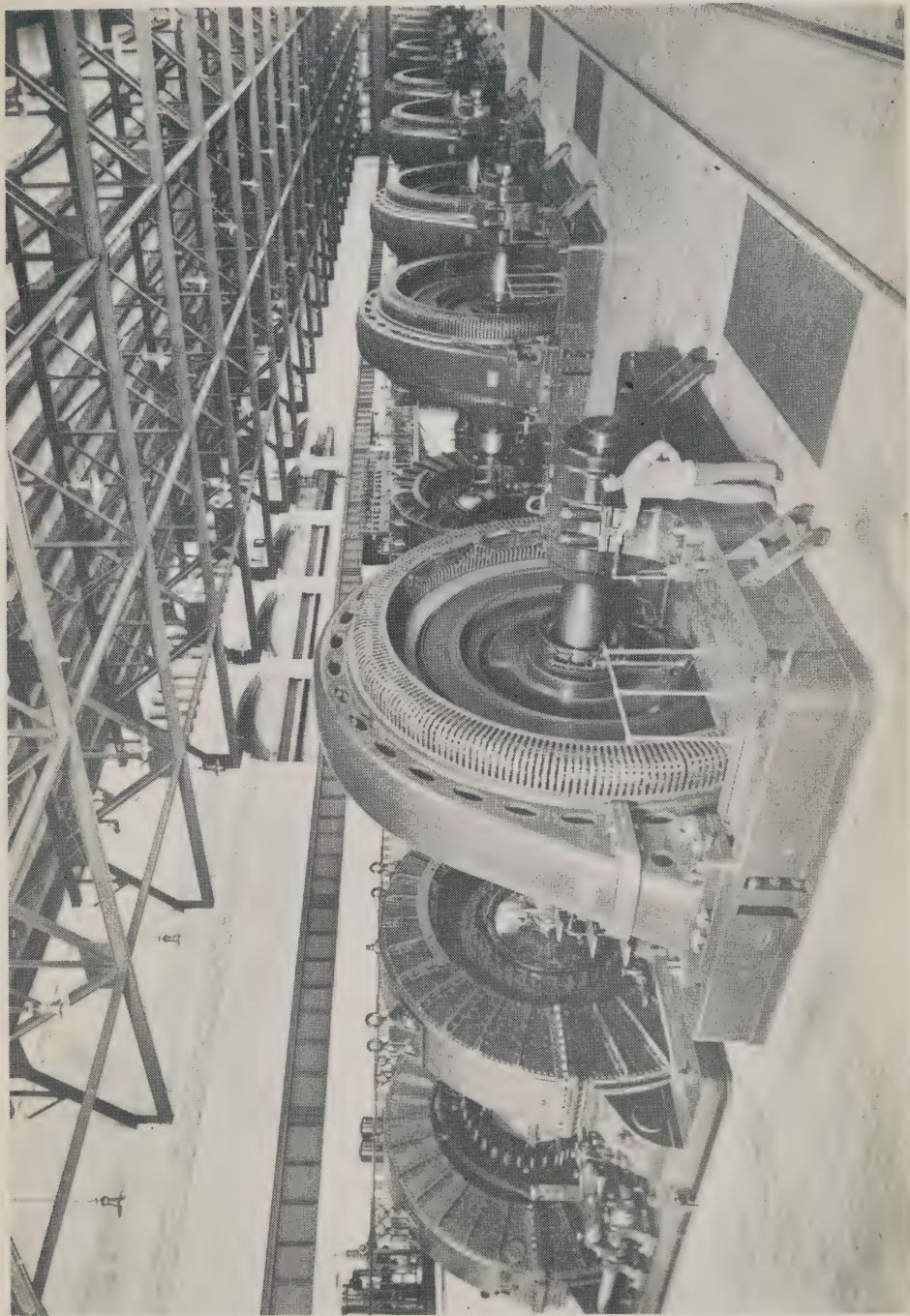
of Ontario gives a total turbine installation of 1,052,048 horse-power. Of this Niagara is of course responsible for a considerable portion, the three large power plants in operation on the Canadian side of the falls having a total installed capacity of over 500,000 horse-power. The Decew Fall plant, also using Niagara river water, adds another 45,000 horse-power. The Queenston-Chippawa development, now nearing completion, will contribute an additional 250,000 horse-power with an ultimate installation of double this amount.

ONTARIO HYDRO-ELECTRIC POWER COMMISSION.—Adequate supply of hydro-electric energy at low rates is assured Ontario's various industrial centres through the activities of the provincial Hydro-Electric Power Commission, which owns and operates almost every hydro-electric central station in the province and through the extensive network of its various transmission systems supplies the energy at cost price to the different municipalities. The latter look after the distribution within their own limits. Geographically, the operations of the commission are divided into a number of transmission systems, of which the most important is that radiating from Niagara. The energy for this system is drawn from the commission's 228,200-horsepower hydro-electric plant and from the 109,000-horsepower plant of the Canadian Niagara Power Company, Limited, from which a block of power is purchased. The area covered by this system extends from Toronto to Windsor and includes some 140 municipal distribution systems.

CITIES DERIVING POWER FROM NIAGARA—Among the industrial centres thus supplied with Niagara hydro-electric power under municipal control are Toronto, Hamilton, London, Brantford, the Border Cities, Kitchener, Welland, St. Catharines, Stratford, St. Thomas, Guelph, Sarnia, Chatham and Niagara Falls. Toronto is also supplied from the 164,500-horsepower Niagara plant of the Toronto Power Company, and a 24,100-horsepower auxiliary steam plant. This latter entire system has recently been purchased by the Hydro Commission and the city of Toronto. Both Hamilton and Brantford also have an additional supply which is obtained from the 45,000 horse-power Decew Fall plant of the Dominion Power and Transmission Company. The company distributes in each city, and has a 29,500-horse power auxiliary steam plant at Hamilton.

OTHER SYSTEMS.—Among the other more important systems of the Hydro-Electric Power Commission may be mentioned the Central Ontario system, which derives its energy from six hydro-electric plants having a total capacity of 36,550 horse-power, located on the Trent Canal system. This supplies such industrial centres as Kingston, Peterborough,





INTERIOR OF GENERATING STATION, ONTARIO POWER COMPANY, NIAGARA





## WATER-POWERS AND THEIR INDUSTRIAL IMPORTANCE

Belleville, Oshawa, and Lindsay. The Severn, Wasdell, Muskoka and Eugenia systems are supplied from five plants with a total capacity of over 24,000 horse-power, and serve some sixty municipal distributions, among which are Owen Sound, Orillia, Collingwood, Barrie, and Midland. The Rideau and St. Lawrence systems supply sixteen municipal distributions, including Brockville, Smiths Falls, and Perth. The Nipissing system supplies North Bay and three other municipalities from a 2,200-horsepower plant on South river. Ottawa has a most desirable source of supply at the Chaudière falls of the Ottawa river, located partly within the city itself, where four hydro-electric plants of 42,800 horse-power total capacity are in operation. The distribution is effected under municipal control and by the Ottawa Electric Company; the latter also have a steam auxiliary plant of 6,275 horse-power. The mining requirements of the Cobalt district are well taken care of by the four hydro-electric plants of the Northern Ontario Light and Power Company, with a total capacity of 20,420 horse-power, while the same company also supplies compressed air from a 5,500-horsepower hydraulic air-compressor plant. Port Arthur and Fort William are supplied from three hydro-electric plants of over 60,000-horsepower total capacity; one of these is the new Nipigon plant of the Ontario Hydro-Electric Power Commission.

### (g) QUEBEC

This province covers a very vast area, and as its northern portion, particularly the newly added district of Ungava, has only been explored to a very limited extent, any estimate of known water-power possibilities for the entire province must necessarily be low. The total known hydraulic resources are estimated at 6,915,244 horse-power at the minimum flow of rivers and at 11,640,052 horse-power for maximum development dependable for six months in the year. The powers of the St. Lawrence in this province are not international; their estimated possibilities of some 1,900,000 horse-power belong entirely to Canada. They are of much importance owing to their proximity to the Montreal district, but only a relatively small portion has thus far been developed. Other outstanding power streams are the St. Maurice with a total possible 800,000 horse-power, and the Ottawa with over 1,000,000 horse-power, of which some 640,000 horse-power forms Quebec's share, while the tributaries of the latter river offer numerous additional sites. The streams of the Lake St. John district and of the north shore of the lower St. Lawrence also have large power potentialities. The Hamilton river is noteworthy.

A large amount of water-power is being utilized in this province, the total turbine installation representing 925,972 horse-power. In this

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

connection it is of interest to note that the activities of the Quebec Streams Commission have done much to encourage water-power development by undertaking or facilitating water storage for the regulation of streams. The La Loutre reservoir is the largest known for power purposes, with a capacity of 160 billion cubic feet, ensuring a regulated flow to the large powers of the St. Maurice river. Other storage undertakings of this commission include the regulation of the St. François and Ste. Anne de Beaupre rivers, while numerous other streams are included for future work.

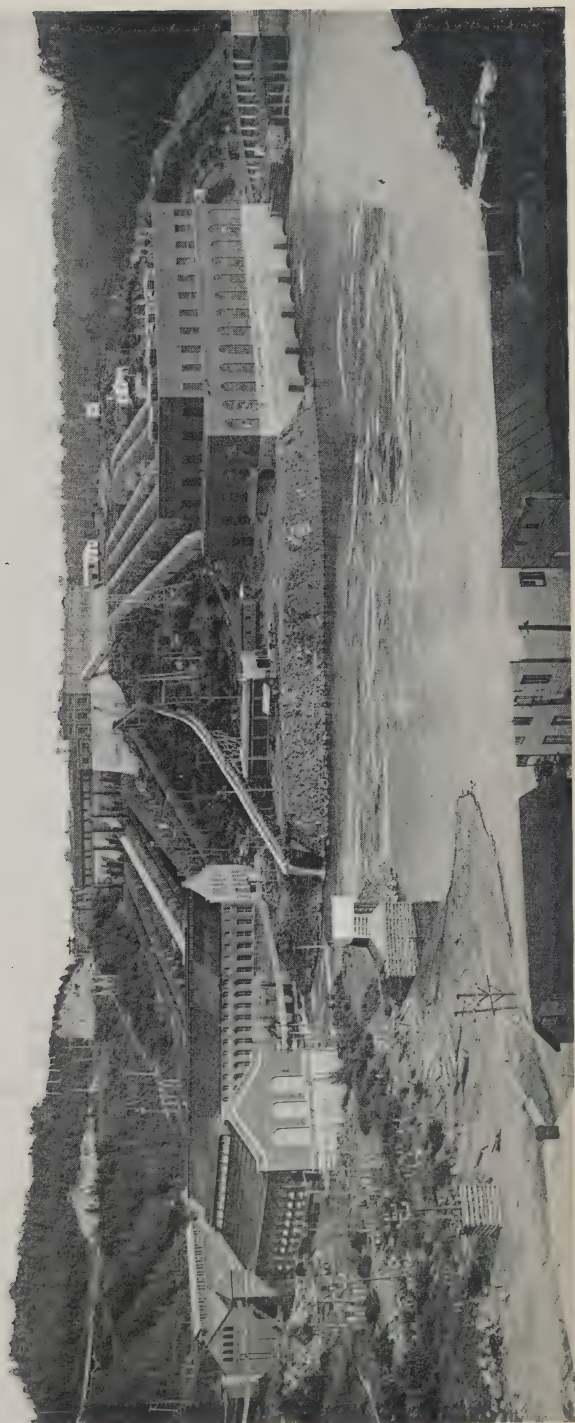
All the industrial centres of this province are amply provided for as regards hydro-electric energy, the service in almost every case being under private control. The Shawinigan system is notable, deriving its hydro-electric energy from three large plants of 268,500 horse-power total capacity, located on the St. Maurice river. An additional 80,000 horse-power is to be in operation shortly. The company, through subsidiary organizations, also operates a number of smaller local hydro plants at various points of the territory covered.

MONTREAL.—In addition to the energy taken from the Shawinigan system, Montreal draws its hydro-electric supply from five power plants. Four of these plants, the Cedars, Soulanges, Lachine and Chambly, with a total capacity of 183,050 horse-power (which is being increased by 21,600 horse-power) are operated by the Montreal Light, Heat and Power Consolidated, the latter also having a 22,000-horsepower auxiliary steam plant. The other hydro plant of 30,400 horse-power owned by the Canadian Light and Power Company, supplies the distribution system of the Montreal Public Service Corporation; the latter has also an auxiliary steam plant of 3,525 horse-power.

QUEBEC.—Quebec city receives its hydro-electric energy from many sources. Shawinigan power is distributed by the Public Service Corporation of Quebec; this company also has a 3,500-horsepower auxiliary steam plant. The Quebec Railway Light, Heat and Power Company receives its energy from four hydro plants of 33,825 horse-power total capacity, with a 2,250-horsepower auxiliary steam plant in the city.

HULL.—Hull enjoys the same advantages as the city of Ottawa from the Chaudière falls, where the four hydro-electric stations, aggregating 42,800 horse-power, serve both cities; the distribution in Hull is controlled by the Hull Electric Company and the Ottawa Electric Company.

THREE RIVERS, SHERBROOKE, AND THE EASTERN TOWNSHIPS.—The hydro-electric supply of Three Rivers is secured from the Shawinigan system, through the North Shore Power Company. Other centres supplied by the



POWER PLANT, SHAWINIGAN SYSTEM, ST. MAURICE RIVER, P.Q.





## WATER-POWERS AND THEIR INDUSTRIAL IMPORTANCE

Shawinigan system, usually through subsidiary distributing companies, include Shawinigan Falls; Grand'mère, which also has a 950-horsepower municipal plant; Sorel; Joliette, where the distribution is under municipal control; and Thetford, which also receives energy from the 4,200-horsepower hydro plant of the St. Francis Water Power Company at Disraeli. Sherbrooke has one of the few municipal systems of the province, the city operating three hydro-electric plants of 8,840 horse-power total capacity.

Many of the industrial centres of the Eastern Townships, between the St. Lawrence and the boundary, are supplied by the Southern Canada Power Company, which draws a portion of its energy from the Shawinigan system and from the Chambly plant of the Montreal system, and also operates three hydro plants of 11,350 horse-power total capacity, and a 675 horse-power auxiliary steam station in reserve. The centres served by this company include St. Johns, St. Hyacinthe, and Granby. The supply for Lévis is obtained from a 4,800-horsepower hydro plant on the Chaudière river controlled by the Quebec Railway, Light, Heat and Power Company. Rivière-du-Loup is supplied under municipal control from a 525 horse-power local hydro plant; Chicoutimi by the Société d'Eclairage et d'Energie Electrique du Saguenay from a 7,000-horsepower hydro plant.

### (h) NEW BRUNSWICK

Fairly complete preliminary information is available on the water-powers of this province. At ordinary minimum flow, its streams are estimated to possess a total of 50,406 horse-power, while for maximum development dependable for six months in the year the total would be 120,807 horse-power. The most important site is at Grand Falls, on the St. John river, where a minimum of 22,500 horse-power is available. The amount used at present in this province comprises a total installation of 21,180 horse-power, but is expected to be substantially increased in the near future through the activities of the New Brunswick Electric Power Commission.

While the large centres have thus far been supplied with electricity from steam plants, as for instance St. John with 6,600 horse-power, Fredericton with 1,140 horse-power, and Moncton with 1,150 horse-power, the New Brunswick Electric Power Commission is taking steps to have some of them replaced by water-power. One of the undertakings now under construction is a hydro-electric development of 9,000 horse-power for St. John. Other similar projects are being considered elsewhere in the province.

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

### (i) PRINCE EDWARD ISLAND

The individual water-powers of the island are not large, but they serve a very useful purpose for small industries. The total possibilities are estimated at a minimum of 3,000 horse-power and at 5,270 horse-power for maximum development dependable for half the year. The total water-power installation is 1,933 horse-power, and while some of the smaller centres derive their electricity from water-power, Charlottetown is supplied from a 1,182-horsepower combination gas engine and steam power plant.

### (j) NOVA SCOTIA

This province has important water-power possibilities in addition to its large coal resources. The river basins are comparatively small, but this is compensated by heavy rainfall, steep river gradients suitable for power sites, and the many possibilities for storage reservoirs. The total minimum potentialities are estimated at 20,751 horse-power, while for maximum development dependable for half the year they aggregate 128,264 horse-power. It should be added, moreover, that uncommon facilities for water storage found throughout the province will make it possible to supply a maximum demand of 300,000 commercial horse-power, allowing for the usual daily and seasonal variation in the consumers' requirements.

The plentiful supply of coal has naturally thus far restricted water-power development, the total installation amounting to not more than 35,774 horse-power. It is, however, expected that the Nova Scotia Power Commission will do much to accelerate further hydraulic development.

The electric energy for the more important industrial centres is still supplied from steam. Halifax has an 8,500-horsepower steam plant (also supplying Dartmouth), but will soon receive energy from a 10,800 horse-power hydro-electric development, with an ultimate capacity of 15,000 horse-power, which has been undertaken by the Nova Scotia Power Commission. The Sydney district is supplied from three stations of 2,945 horsepower total capacity; while the steam power plants of the Dominion Coal Company, and of the Nova Scotia Steel and Coal Company with a total capacity of 16,570 horse-power, also contribute a large amount. Amherst has a 3,140 horse-power steam plant. Yarmouth is one of the few large centres supplied from water-power and obtains its energy from a 450-horsepower hydro-electric plant, now being enlarged to 1,050 horse-power, on Tusket river.

## WATER-POWERS AND THEIR INDUSTRIAL IMPORTANCE

### §6. RATES AND COST OF POWER

To an industrial power user the question of rates or cost of the energy required is of much importance. This is particularly the case for those industries requiring a relatively large amount of power per dollar of manufactured product. Owing to the great variety in local conditions and other factors it is extremely difficult to give comprehensive figures on the cost of power without entering into an unduly long discussion. There are so many considerations to take into account that practically each case has to be treated individually. In a general way, however, as may be gathered from the brief facts exposed above regarding the power supply of the various industrial centres, since in most cases the energy is derived from water-power, it is usually available at low rates.

In the proximity of one of the large Canadian hydro-electric developments, blocks of power are sold at as low a rate as \$11.50 per horse-power per year; this, however, is exceptional and a more representative figure for cheap power would be \$15 per horse-power per year. Many large industries, such as pulp and paper and mining, have their own hydro-electric plants; the cost of power generation in many of the latter is very low; for fairly large plants under favourable conditions it has been reported as low as \$9 to \$15 per horse-power per year.

[TABLE, AVERAGE MONTHLY BILLS

TABLE SHOWING AVERAGE MONTHLY BILLS (IN DOLLARS AND CENTS) FROM ONTARIO HYDRO-ELECTRIC POWER COMMISSION BULLETIN  
JULY-AUGUST, 1921

Consumer	Group	Hydro Municipalities			All Others (80)						Canada (40)			United States (40)						Steam Plants (40)						Water Power (36)			Gas and Oil (4)		
		Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.			
{ I. No. 5 Commercial Lighting, . . . 100 K.W.H. VI.}		\$ 6 19	\$ 1 94	\$ 3 94	\$ cts. 18 68	\$ cts. 2 30	\$ cts. 11 94	\$ cts. 18 00	\$ cts. 2 30	\$ cts. 13 00	\$ cts. 18 68	\$ cts. 5 21	\$ cts. 11 82	\$ cts. 18 00	\$ cts. 9 00	\$ cts. 14 81	\$ cts. 7 84	\$ cts. 18 00	\$ cts. 2 30	\$ cts. 14 50	\$ cts. 12 00	\$ cts. 7 81	\$ cts. 8 13	\$ cts. 15 00	\$ cts. 16 84	\$ cts. 12 00	\$ cts. 12 63				
		\$ 3 87	\$ 1 75	\$ 2 74	\$ cts. 15 00	\$ cts. 3 25	\$ cts. 9 34	\$ cts. 13 00	\$ cts. 4 61	\$ cts. 9 93	\$ cts. 15 00	\$ cts. 8 01	\$ cts. 9 03	\$ cts. 12 50	\$ cts. 6 08	\$ cts. 9 85	\$ cts. 7 34	\$ cts. 12 50	\$ cts. 3 25	\$ cts. 9 67	\$ cts. 4 50	\$ cts. 7 18	\$ cts. 7 34	\$ cts. 12 00	\$ cts. 12 63						
		\$ 2 82	\$ 1 06	\$ 1 66	\$ cts. 11 00	\$ cts. 4 72	\$ cts. 7 09	\$ cts. 11 00	\$ cts. 5 82	\$ cts. 8 00	\$ cts. 11 00	\$ cts. 8 78	\$ cts. 11 45	\$ cts. 6 30	\$ cts. 9 03	\$ cts. 5 82	\$ cts. 7 84	\$ cts. 11 00	\$ cts. 4 72	\$ cts. 7 34	\$ cts. 4 50	\$ cts. 7 18	\$ cts. 7 34	\$ cts. 12 00	\$ cts. 12 63						
		\$ 1 55	\$ 1 06	\$ 1 31	\$ cts. 11 45	\$ cts. 6 30	\$ cts. 8 20	\$ cts. 6 65	\$ cts. 6 30	\$ cts. 4 50	\$ cts. 11 45	\$ cts. 7 00	\$ cts. 8 78	\$ cts. 11 45	\$ cts. 6 30	\$ cts. 9 03	\$ cts. 5 82	\$ cts. 7 84	\$ cts. 11 00	\$ cts. 4 72	\$ cts. 7 34	\$ cts. 4 50	\$ cts. 7 18	\$ cts. 7 34	\$ cts. 12 00	\$ cts. 12 63					
		\$ 1 93	\$ 1 93	\$ 1 93	\$ cts. 11 00	\$ cts. 3 00	\$ cts. 5 99	\$ cts. 6 00	\$ cts. 3 00	\$ cts. 4 50	\$ cts. 11 00	\$ cts. 5 31	\$ cts. 6 91	\$ cts. 11 00	\$ cts. 5 31	\$ cts. 7 18	\$ cts. 6 30	\$ cts. 4 70	\$ cts. 3 00	\$ cts. 6 83	\$ cts. 5 60	\$ cts. 3 00	\$ cts. 6 83	\$ cts. 6 83	\$ cts. 12 00	\$ cts. 12 63					
		\$ 29 57	\$ 8 40	\$ 17 24	\$ cts. 80 78	\$ cts. 10 42	\$ cts. 38 89	\$ cts. 80 00	\$ cts. 38 76	\$ cts. 80 78	\$ cts. 15 50	\$ cts. 39 07	\$ cts. 80 00	\$ cts. 28 98	\$ cts. 51 65	\$ cts. 50 00	\$ cts. 10 42	\$ cts. 23 72	\$ cts. 80 78	\$ cts. 54 50	\$ cts. 67 64	\$ cts. 26 28									
{ I. No. 6 Power 5 H.P. 5000 K.W.H. VI.}		\$ 17 78	\$ 7 71	\$ 12 14	\$ cts. 45 00	\$ cts. 11 81	\$ cts. 23 52	\$ cts. 45 00	\$ cts. 9 00	\$ cts. 25 47	\$ cts. 41 40	\$ cts. 20 80	\$ cts. 42 75	\$ cts. 21 38	\$ cts. 30 14	\$ cts. 42 75	\$ cts. 16 74	\$ cts. 29 50	\$ cts. 20 46	\$ cts. 5 00	\$ cts. 16 11	\$ cts. 5 00	\$ cts. 16 11	\$ cts. 25 31	\$ cts. 20 46						
		\$ 15 26	\$ 5 46	\$ 10 43	\$ cts. 42 75	\$ cts. 9 00	\$ cts. 22 47	\$ cts. 30 00	\$ cts. 5 00	\$ cts. 13 30	\$ cts. 35 00	\$ cts. 11 50	\$ cts. 23 20	\$ cts. 35 00	\$ cts. 13 30	\$ cts. 23 02	\$ cts. 26 00	\$ cts. 11 50	\$ cts. 18 75	\$ cts. 15 96	\$ cts. 19 70	\$ cts. 11 97	\$ cts. 15 96	\$ cts. 20 46							
		\$ 10 11	\$ 6 60	\$ 8 20	\$ cts. 31 35	\$ cts. 5 00	\$ cts. 22 24	\$ cts. 30 00	\$ cts. 5 00	\$ cts. 13 30	\$ cts. 35 00	\$ cts. 11 50	\$ cts. 23 20	\$ cts. 35 00	\$ cts. 13 30	\$ cts. 23 02	\$ cts. 26 00	\$ cts. 11 50	\$ cts. 18 75	\$ cts. 15 96	\$ cts. 19 70	\$ cts. 11 97	\$ cts. 15 96	\$ cts. 20 46							
		\$ 7 46	\$ 6 13	\$ 6 70	\$ cts. 35 00	\$ cts. 11 50	\$ cts. 21 79	\$ cts. 13 30	\$ cts. 13 30	\$ cts. 35 00	\$ cts. 11 50	\$ cts. 23 20	\$ cts. 35 00	\$ cts. 13 30	\$ cts. 23 02	\$ cts. 26 00	\$ cts. 11 50	\$ cts. 18 75	\$ cts. 15 96	\$ cts. 19 70	\$ cts. 11 97	\$ cts. 15 96	\$ cts. 20 46								
		\$ 9 90	\$ 9 90	\$ 9 90	\$ cts. 35 00	\$ cts. 11 97	\$ cts. 24 42	\$ cts. 19 00	\$ cts. 11 97	\$ cts. 15 48	\$ cts. 35 00	\$ cts. 16 20	\$ cts. 26 65	\$ cts. 35 00	\$ cts. 19 00	\$ cts. 28 04	\$ cts. 19 70	\$ cts. 11 97	\$ cts. 15 96	\$ cts. 19 70	\$ cts. 11 97	\$ cts. 15 96	\$ cts. 20 46								
		\$ 177 80	\$ 77 10	\$ 121 40	\$ cts. 450 00	\$ cts. 89 20	\$ cts. 165 03	\$ cts. 450 00	\$ cts. 79 20	\$ cts. 179 10	\$ cts. 166 25	\$ cts. 125 00	\$ cts. 143 03	\$ cts. 450 00	\$ cts. 141 07	\$ cts. 215 61	\$ cts. 172 80	\$ cts. 89 20	\$ cts. 131 67	\$ cts. 172 80	\$ cts. 143 55	\$ cts. 172 02									
{ I. No. 7. Power 50 H.P. 5000 K.W.H. VI.}		\$ 152 60	\$ 54 60	\$ 104 30	\$ cts. 284 75	\$ cts. 60 17	\$ cts. 150 23	\$ cts. 284 75	\$ cts. 125 00	\$ cts. 194 55	\$ cts. 284 75	\$ cts. 125 00	\$ cts. 182 90	\$ cts. 166 25	\$ cts. 50 00	\$ cts. 110 31	\$ cts. 166 25	\$ cts. 50 00	\$ cts. 110 31	\$ cts. 166 25	\$ cts. 50 00	\$ cts. 110 31	\$ cts. 166 25	\$ cts. 50 00	\$ cts. 110 31						
		\$ 101 11	\$ 66 00	\$ 82 00	\$ cts. 250 00	\$ cts. 50 00	\$ cts. 141 07	\$ cts. 250 00	\$ cts. 174 25	\$ cts. 250 00	\$ cts. 147 50	\$ cts. 189 63	\$ cts. 166 25	\$ cts. 50 00	\$ cts. 110 31	\$ cts. 166 25	\$ cts. 50 00	\$ cts. 110 31	\$ cts. 166 25	\$ cts. 50 00	\$ cts. 110 31	\$ cts. 166 25	\$ cts. 50 00	\$ cts. 110 31							
		\$ 74 60	\$ 61 30	\$ 67 00	\$ cts. 141 07	\$ cts. 82 18	\$ cts. 115 36	\$ cts. 82 18	\$ cts. 82 18	\$ cts. 141 07	\$ cts. 98 00	\$ cts. 120 89	\$ cts. 141 07	\$ cts. 82 18	\$ cts. 115 40	\$ cts. 117 50	\$ cts. 113 00	\$ cts. 115 40	\$ cts. 94 20	\$ cts. 117 54	\$ cts. 94 20	\$ cts. 117 54	\$ cts. 117 54								
		\$ 90 03	\$ 90 03	\$ 90 03	\$ cts. 280 00	\$ cts. 94 20	\$ cts. 183 93	\$ cts. 116 78	\$ cts. 100 00	\$ cts. 108 39	\$ cts. 280 00	\$ cts. 94 20	\$ cts. 202 61	\$ cts. 280 00	\$ cts. 100 00	\$ cts. 212 38	\$ cts. 141 65	\$ cts. 94 20	\$ cts. 117 54	\$ cts. 94 20	\$ cts. 117 54	\$ cts. 94 20	\$ cts. 117 54	\$ cts. 117 54							
		\$ 90 05	\$ 90 05	\$ 90 05	\$ cts. 280 00	\$ cts. 94 20	\$ cts. 183 93	\$ cts. 116 78	\$ cts. 100 00	\$ cts. 108 39	\$ cts. 280 00	\$ cts. 94 20	\$ cts. 202 61	\$ cts. 280 00	\$ cts. 100 00	\$ cts. 212 38	\$ cts. 141 65	\$ cts. 94 20	\$ cts. 117 54	\$ cts. 94 20	\$ cts. 117 54	\$ cts. 94 20	\$ cts. 117 54	\$ cts. 117 54							
		\$ 90 05	\$ 90 05	\$ 90 05	\$ cts. 280 00	\$ cts. 94 20	\$ cts. 183 93	\$ cts. 116 78	\$ cts. 100 00	\$ cts. 108 39	\$ cts. 280 00	\$ cts. 94 20	\$ cts. 202 61	\$ cts. 280 00	\$ cts. 100 00	\$ cts. 212 38	\$ cts. 141 65	\$ cts. 94 20	\$ cts. 117 54	\$ cts. 94 20	\$ cts. 117 54	\$ cts. 94 20	\$ cts. 117 54	\$ cts. 117 54							

For the purpose of compiling this table, the municipalities were grouped in six arbitrary divisions (See Roman numerals) according to capacity of plant installed, as follows:—

Capacity (Kv-a)	I		II		III		IV		V		VI	
	Less than 300	301 to 1001	301 to 1001	1001 to 3000	1001 to 3000	3001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	over 30,000	



TABLE SHOWING AVERAGE MONTHLY BILLS (IN DOLLARS AND CENTS) FROM ONTARIO HYDRO-ELECTRIC POWER COMMISSION BULLETIN  
JULY-AUGUST, 1921

Consumer	Group	Hydro Municipalities (50)						Municipalities other than Hydro					
		All Others (42)			Canada (15)			All Others (42)			Canada (15)		
		Max.	Min.	Average	Max.	Min.	Average	Max.	Min.	Average	Max.	Min.	Average
No. 8 Power 500 H.P. 50,000 K.W.H.	{ II. IV. V. VI. }	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
		1,526 00	546 00	1,043 00	1,800 00	508 50	1,298 77	1,800 00	508 50	1,298 77	1,800 00	508 50	1,254 56
		1,011 00	660 00	820 00	1,800 00	500 00	1,131 22	1,800 00	500 00	1,131 22	1,800 00	500 00	1,062 66
		746 00	613 00	669 50	1,003 12	586 63	817 47	586 63	586 63	817 47	586 63	586 63	586 63
		880 20	880 20	880 20	1,641 99	570 00	1,158 19	724 55	664 06	1,158 19	724 55	664 06	694 30
No. 9 Power 560 H.P. 100,000 K.W.H.	{ III. IV. V. VI. }	1,591 20	586 31	1,177 22	3,600 00	542 25	2,112 28	3,600 00	542 25	2,112 28	3,600 00	542 25	2,013 96
		1,077 60	704 36	873 56	3,600 00	1,000 00	1,867 45	3,600 00	1,000 00	1,867 45	3,600 00	1,000 00	1,848 10
		779 75	657 00	718 38	1,830 51	1,048 40	1,468 08	1,156 63	1,156 63	1,468 08	1,156 63	1,156 63	1,132 96
		1,078 20	1,078 20	1,078 20	2,802 09	908 44	1,716 66	956 48	908 44	1,716 66	956 48	908 44	932 96
Consumer	Group	Municipalities other than Hydro						Water Power (14)					
		United States (27)			Steam Power (38)			United States (27)			Steam Power (38)		
		Max.	Min.	Average	Max.	Min.	Average	Max.	Min.	Average	Max.	Min.	Average
No. 8 Power 500 H.P. 50,000 K.W.H.	{ II. IV. V. VI. }	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
		1,518 65	1,246 00	1,350 38	1,746 00	928 35	1,367 81	1,800 00	508 50	1,367 81	1,800 00	508 50	1,188 30
		1,500 00	720 00	1,180 19	1,800 00	1,046 25	1,273 23	1,258 75	500 00	1,273 23	1,258 75	500 00	849 69
		1,003 12	593 00	855 95	1,003 12	586 63	788 86	905 00	873 00	788 86	905 00	873 00	889 00
		1,641 99	570 00	1,274 16	1,641 99	664 06	1,319 29	1,052 35	570 00	1,319 29	1,052 35	570 00	782 30
No. 9 Power 560 H.P. 100,000 K.W.H.	{ III. IV. V. VI. }	2,802 15	1,871 00	2,194 52	3,433 50	1,871 00	2,427 78	3,600 00	542 25	2,427 78	3,600 00	542 25	1,794 44
		2,430 16	1,120 00	1,743 94	3,600 00	1,608 75	2,093 23	2,317 50	1,000 00	2,093 23	2,317 50	1,000 00	1,462 83
		1,830 51	1,048 40	1,519 98	1,830 51	1,048 40	1,424 71	1,780 00	1,373 00	1,424 71	1,780 00	1,373 00	1,576 50
		2,802 09	1,050 00	1,912 71	2,802 09	908 44	1,968 96	1,377 35	956 48	1,968 96	1,377 35	956 48	1,124 61

The above tables, although compiled in Ontario, may be taken as fairly indicative of power costs throughout Canada.



**CANADIAN TARIFFS AND TRADE  
AGREEMENTS**





## CHAPTER VI

### CANADIAN TARIFFS AND TRADE AGREEMENTS

The Canadian tariff is protective in character and is designed not only as a source of revenue to the State, but also to foster Canadian industry. It permits raw materials to enter at low rates of duty or free; it imposes a higher rate on semi-manufactured articles imported for further manufacture in Canada; and the highest rate on imported articles which are also produced in the Dominion. During the war, Canada added a  $7\frac{1}{2}$  per cent war tax to the duty on many articles, but this was cancelled in May, 1920, and the tariff is now back on the pre-war level established in 1907. The majority of customs rates quoted are *ad valorem*.

The Canadian tariff falls into three main classes. The first tariff, known as the British preferential, permits a material reduction in duties chargeable on goods produced or manufactured in the United Kingdom and most of her Dominions, Colonies and Protectorates. The second schedule, known as the intermediate tariff, applies to certain classes of goods from the countries with which Canada has commercial treaties or agreements. The third schedule, or general tariff, applies to goods from all other origins. In view of this diversity of duties according to the origin of the goods, the Custom authorities require a declaration to be made by the exporter as to the country of origin, accompanied by a certificate to this effect attested by competent authority in the exporting country.

#### §1. BRITISH PREFERENTIAL TARIFF

Canada has afforded the United Kingdom a substantial preference for many years. It now includes not only Great Britain but, with one or two exceptions, all her possessions as well. This preference is in general about  $33\frac{1}{3}$  per cent lower than the normal rate. The United Kingdom, New Zealand, South Africa, British Guiana, British Honduras, British West Indies, Cyprus and Samoa reciprocate.

The United Kingdom accords Canada a preference of one-third off the general tariff in the case of goods subject to *ad valorem* duties. These articles include clocks, watches, motor-cars (exclusive of trucks, which are exempt from duty), musical instruments, the spare parts and accessories of many of these articles. Cinematographic films subject to special duties are also included. The British general tariff, applicable to all foreign countries, on goods subject to *ad valorem* duties is  $33\frac{1}{3}$  per cent, so that the rate to

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

Canada and other parts of the Empire is  $22\frac{2}{3}$  per cent. There is a further list of goods, among which are included preserved fruits, sugar, confectionery, condensed milk and some other articles which are subject to special rates of duty; on these Canada and the other parts of the Empire have a preference of one-sixth off the general tariff.

New Zealand gives Canada a variable preference. Probably the most common rate is 30 per cent under general tariff and 20 per cent under the New Zealand preferential tariff. When the general tariff varies the preferential rate is usually one-third lower. Certain items, dutiable at 10 per cent or 20 per cent when imported from a foreign country, enter free from Canada.\*

South African preference is usually a rebate of 3 per cent *ad valorem* on all goods subject to import duty. As in many cases the South African full rate to foreign countries is only 3 per cent, imports from Canada or other reciprocating British Colonies enter free of duty.

Rhodesia, which is included in the South African Customs union, has a tariff almost similar to that of South Africa. In many instances, however, Rhodesia gives a larger preference to Canada and the other parts of the British Empire. The most important item in this respect is that covering the wide class of unenumerated goods. While the preferential reduction on this item in South Africa is only 3 per cent *ad valorem*, there is a rebate in Rhodesia of 11 per cent *ad valorem*. But that part of northern Rhodesia known as the Congo Basin has a uniform tariff for all countries and, therefore, no British or Colonial preference.

New preferential tariff relations were made with the British West Indies in an agreement under date of June, 1920. This agreement was recently ratified by the Canadian Parliament and by all the West Indian Colonies which were parties thereto, except Bermuda. The preference provided for in this agreement covers practically all goods. As a result, Canada obtains a 50 per cent preference in Barbados, British Guiana and Trinidad,  $33\frac{1}{3}$  per cent preference in British Honduras (in some cases 50%), the Leeward Islands, and the Windward Islands, and 25 per cent preference in the Bahamas. Jamaica has not yet put the agreement into effect but accords a preference on certain cotton piece goods.

Cyprus allows Canada a preference, as compared with foreign countries of one-third off the full rate on certain specified commodities, and one-sixth off a large number of unenumerated goods.

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\*The New Zealand tariff introduced in Parliament, November 3, 1921, provides for larger preferences on many items, reducing the preference on only a few.

## CANADIAN TARIFFS AND TRADE AGREEMENTS

In Samoa the general tariff on nearly all goods is  $22\frac{1}{2}$  per cent and the British preference, which is applicable to Canada, 15 per cent. Tobaccos, however, are excluded.

It will be noticed that no reciprocal trade agreement exists between Canada and India or Australia. But the question of sentiment—the tendency to trade within the Empire—remains. Everything else being equal the Indian or Australian importer desiring North American products will presumably deal with Canada in preference to dealing elsewhere, and this applies no less to trade with Hong Kong and Shanghai. The Chinese merchant—ever conservative—has come to deal by custom with British importers who have been long on the ground; and these in turn look first to Canada for produce of the new world.

### §2. INTERMEDIATE TARIFF

The intermediate tariff was introduced under the Canadian Customs Act in 1907. The then Minister of Finance, the Hon. W. S. Fielding, clearly stated in his budget speech the reasons for introducing this intermediate tariff. It was not designed to become immediately effective, but for use as a basis of negotiation with foreign countries in the interests of Canadian trade—an inducement to secure for Canada favoured markets abroad. Within a short time, however, it was given effect to in the French treaty of 1907-9. This treaty provided a reciprocal trade agreement between Canada and France, her Colonies and Protectorates, whereby certain of their imports to Canada and Canadian exports to them were brought under a lower rate than the general tariff but not as low as that of the British preferential tariff. Other treaties were arranged and are still effective with Italy, Belgium and the Netherlands. In June, 1920, the French treaty was denounced, but early in 1921 a new French Trade Agreement Act was entered into, whereby Canada accorded France the "most favourable tariffs and taxes that are, or may be granted by Canada to the produce of any third power except those of the United Kingdom or British Dominions." In return the French Government agreed to continue for the benefit of Canadian producers the benefits accorded in the Conventions of 1907-9 with slight modifications and adjustments.

The intermediate tariff applies, of course, only to a restricted list of articles imported from the treaty nations. In no case does it equal the reduction allowed under British preference. The tariff concessions granted by Canada to the countries mentioned are also extended to certain



## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

other countries accorded most favoured nation treatment in tariff matters, as follows:—

Argentine Republic	Russia
Colombia	Spain
Denmark	Sweden
Japan	Switzerland
Norway	Venezuela

These in turn accord Canada most favored nation treatment.

Italy gives Canada her lowest tariff on certain goods.

### §3. THE ANTI-DUMPING CLAUSE

The Canadian Customs tariff includes a clause of distinct interest to Canadian manufacturers, known as the dumping clause. This clause prescribes that in the case of imported articles of a kind made or produced in Canada, if the export or actual selling price to the Canadian importer is less than the fair market value in the country whence imported, there shall be, in addition to the duties otherwise payable, a special duty levied according to the difference between the selling price for export and the fair market value for home consumption. This dumping duty is leviable even though the article in question is not dutiable. In no case, however, may it exceed 15 per cent *ad valorem*, and it does not apply to goods on which the normal duties are equal to 50 per cent *ad valorem* nor to goods subject to excise duty.

### §4. VALUATION OF DEPRECIATED CURRENCY

In view of the disorganized state of European exchange, a clause has been introduced into the Canadian Customs Act which provides that in computing the value for duty of imported articles, no reduction shall be allowed in excess of 50 per cent of the value of the standard currency of the country from which the goods are exported to Canada. The value of this clause is in preventing European manufacturers, particularly those of Germany and Austria, where the exchange rates are far below normal, from flooding the country with goods selling at absurdly low prices in Canadian currency.

### §5. DRAWBACKS

The tariff also includes a regulation dealing with drawbacks. The Custom laws and regulations provide for drawbacks of 99 per cent of duties paid on imported materials used in the manufacture of articles exported. This drawback is allowable whether or not the materials are purchased direct or purchased duty paid from other importers.



## CANADIAN TARIFFS AND TRADE AGREEMENTS

### § 6. SALES TAX OF SPECIAL WAR REVENUE ACT

Additional protection is afforded the Canadian manufacturer by an amendment (June 4, 1921) to the War Revenue Act, 1915( Sec. 19 BBB). This section provides for a tax of  $1\frac{1}{2}$  per cent on sales by Canadian manufacturers, wholesalers and jobbers, but imposes a tax of  $2\frac{1}{2}$  per cent on the duty-paid value of goods imported. In respect of sales by manufacturers to retailers or consumers for the purpose of resale, the tax is 3 per cent; and on goods imported by retailers for the purpose of resale the tax payable on duty paid value is 4 per cent. Thus in both instances the section favours domestic manufacture.

In respect of lumber the excise tax is 2 per cent on sales by the Canadian manufacturer, and 3 per cent on importations without further tax on resale. There is a list of exceptions, chiefly partly manufactured products and foodstuffs; otherwise the tax applies to all articles, whether or not they are subject to ordinary duties. These taxes are not payable on goods exported or on sales made to individuals by retail businesses. The drawback of 99 per cent is allowed on taxes paid on materials used in exported articles.



## **TRANSPORTATION FACILITIES**





## CHAPTER VII

### TRANSPORTATION FACILITIES

#### §1. RAILWAYS

Canada is peculiarly fortunate in the matter of transportation facilities. Proportionately, more attention has been given to railway and canal construction in Canada than in any other country in the world, as its growth and development depended largely on solving the problem of transportation across its vast area. No specific enterprise has done more to develop a country than did the Canadian Pacific Railway when it built the first great transcontinental line. Since that time railway mileage has rapidly increased, and to-day Canada is in possession of more railway mileage per head of population than any other country.

From the completion of the transcontinental line of the Canadian Pacific there has been until recently no cessation in the construction of new lines. The main line of the Canadian Pacific Railway is from the Maritime Provinces to Montreal, cutting the northern part of the state of Maine. From Montreal west there are two main lines to Winnipeg, one through Toronto and the other through Ottawa and Sudbury. From Winnipeg the line runs almost straight across the Prairie Provinces, through Regina to Medicine Hat, whence it turns in a northwest direction to Calgary and (by some amazing engineering work) across the Rockies to the Pacific terminus of Vancouver. A network of branch lines covers the industrial areas of Quebec and Ontario and the agricultural districts of the Prairie Provinces. Other branch lines cover North-western Alberta and the new Peace River country. At important junctions along the border, the Canadian Pacific links up with United States systems.

Practically all other railways in Canada are owned by the Government, the last great acquisition being the Grand Trunk which was taken over as the result of the recommendation of a commission appointed to investigate its financial standing. In brief, the reasons for this action on the part of the Canadian Government were: the difficulties in which the Grand Trunk Company was involved; the liability resting on both Federal and Provincial Governments by reason of financial guarantees; the desirability of eliminating needless duplication of lines; and the probability of more economic management when administered in conjunction with the various other Government lines.

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

The main line of the Grand Trunk runs between Montreal and Chicago with many branches covering Ontario. Its subsidiary, the Grand Trunk Pacific, connects Winnipeg with the Pacific Coast. The Transcontinental, the Canadian Northern, the Intercolonial and a number of less important railways, now considered together as the Canadian National Railways, constitute the balance of the Government-owned lines, making a total of 22,230 miles of track.

The total railway construction in Canada at the time of Confederation was some 2,300 miles; by 1897 it had increased to some 17,000; and in 1919 there was about 40,000, not including sidings or double tracking. Since 1901 the total number of passengers carried has increased from eighteen millions to fifty millions and freight from thirty-six million tons to one hundred and twenty-seven million tons, which may be taken as a fair gauge of the economic expansion of the country.

### §2. CANALS

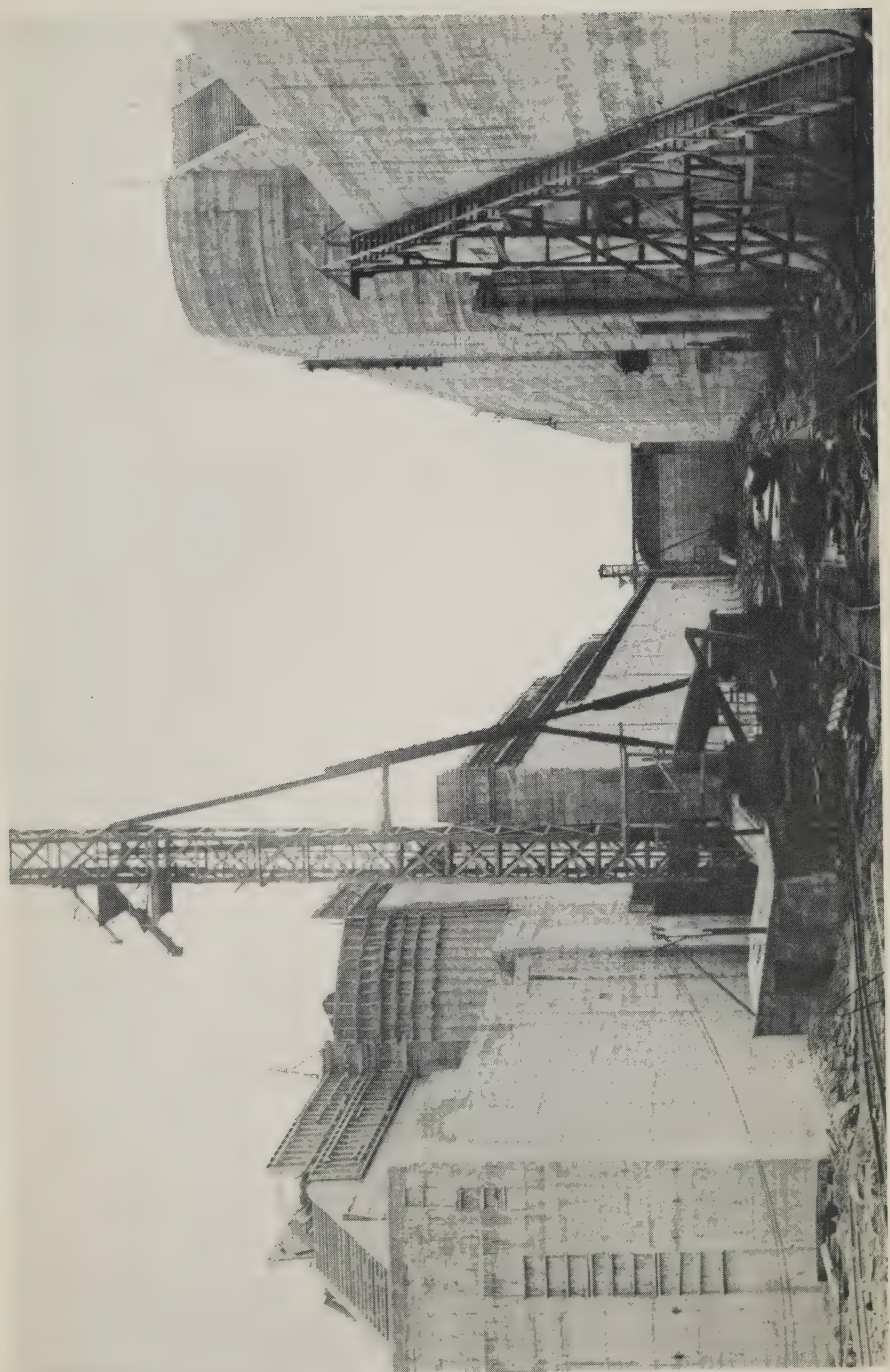
There are six canal systems under the control of the Dominion Government, the most important of which is that between Fort William and Montreal. The other systems are between Montreal and the international boundary line near lake Champlain; Montreal and Ottawa; Ottawa and Kingston; the St. Peter's canal, from the Atlantic ocean to the Bras d'Or lakes, Cape Breton; and the incompleted canal from Trenton to lake Huron. The first is the most important because it creates an inland waterway from the Atlantic nearly one thousand miles in length. The main canal on this system, the Sault Ste. Marie, connects lake Superior to lake Huron, the St. Clair river, lake St. Clair, Detroit river and lake Erie with Port Colborne; here the great Welland canal,\* twenty-six miles in length, connects Port Colborne with Port Dalhousie. From Port Dalhousie there is deep water navigation to the St. Lawrence, where a system of canals, aggregating forty-six miles in length, carries traffic to the harbour of Montreal. Coupled with the admirable east-and-west railway system, this inland waterway is of distinct value to Canada as a trade route for bulk commodities.

### §3. SHIPPING

The main Atlantic ports are Halifax, St. John, N.B., and Sydney, Cape Breton. The inland or St. Lawrence ports of Quebec and Montreal are open to summer navigation only. The Pacific ports are Victoria and Vancouver. Prince Rupert on the Northern Coast of British Columbia, is potentially important in connection with the north country development. The actual distance from Montreal to most European and South

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\* The new Welland Canal is nearing completion.



WELAND SHIP CANALS LOCK NO. 1, LOOKING TOWARDS BREAST WALL





## TRANSPORTATION FACILITIES

American markets is less than from New York, and that from Halifax and St. John very much less than from United States ports. Victoria and Vancouver serve as ports of exit to India, Australasia and the Orient.\*

Passenger and freight services to Europe are provided by the Canadian Pacific Steamships, Limited, and the White Star-Dominion and Cunard companies. The Canadian Pacific Steamships, Limited, also maintains vessels on the Pacific. Many other lesser companies maintain services to Southern Europe, China, Japan, Australia and the Orient. A development of some interest to shippers is the creation of the Canadian Government Merchant Marine, Limited, a fleet organized to assist Canada's overseas trade. It numbers in all forty-five steamers, aggregating 263,950 tons. These steamers are operated by a limited company under the name of the Canadian Government Merchant Marine, Limited. The stock is held by the Canadian Government, and the company is administered by the directors of the Canadian Government Railways. The Canadian Government Merchant Marine operates on trade routes between Montreal and St. John's, Newfoundland, Cuba, West Indies, South America, and various United Kingdom ports; from Vancouver to the United Kingdom via the Panama canal; and from Vancouver to Australia and the Orient.

Everything considered, transportation from Canadian markets is satisfactory. The Canadian manufacturer or exporter has at his disposal admirable railway facilities, a unique inland system of waterways, a number of important ocean ports on both the Atlantic and Pacific coast and at the head of the St. Lawrence, and certain of the major steamship lines of Europe and America, and the Canadian Government Merchant Marine.

In conjunction with adequate transportation and shipping facilities, Canada affords obvious advantages for export trade with certain foreign countries. A branch factory in Canada is geographically valuable to a manufacturer whose market is in North and South America, the Orient or Australasia. The manufacturing possibilities of the Pacific Coast merit the closest consideration not only because of intrinsic conditions in respect of power, climate and material, but also because the Australasian and Far Eastern trade is readily accessible therefrom.

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\*For fuller details of Canadian Ports see Chapter I.

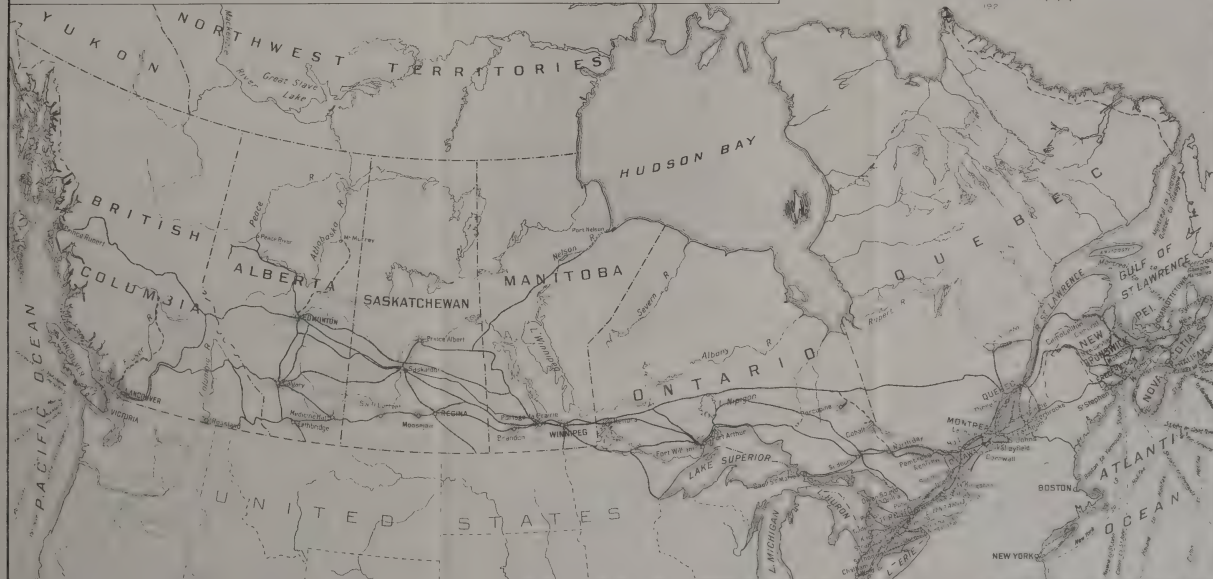


TO	FROM	TO	FROM
LIVERPOOL HALIFAX ST JOHN MONTREAL VANCOUVER NEW YORK		LIVERPOOL HALIFAX ST JOHN MONTREAL VANCOUVER NEW YORK	

45	4,573	5,968	6,535	6,491	10,727	6,503	MANILA	9,554	10,949	11,180	11,472	5,999	11,405
ALEXANDRIA	4,060	4,465	4,702	4,978	10,777	4,990	MARSEILLES	1,966	3,361	3,992	3,884	1,934	3,896
ANTWERP	7,751	7,575	7,812	8,048	8,284	8,305	MATRUH	1,966	3,361	3,992	3,884	1,934	3,896
BARCELONA	11,623	9,477	9,483	9,476	8,205	8,805	MONTVIDEO	6,133	5,586	5,735	6,306	8,078	5,723
BOMBAY	6,163	7,618	7,688	7,771	9,536	6,153	NEW YORK	3,036	599	560	1,451	6,069	7,350
BREITENBURG	7,070	7,070	7,070	7,070	7,070	7,070	OSAKA	4,576	3,548	3,690	4,163	4,077	2,012
CADIZ	1,205	2,625	2,860	3,134	3,395	3,150	PANAMA	4,576	3,548	3,690	4,163	4,077	2,012
CALCUTTA	8,655	3,260	3,383	3,783	4,635	3,258	PORT SAID	4,576	3,548	3,690	4,163	4,077	2,012
CANTON	6,076	6,430	6,550	7,106	7,527	6,795	PORT SPAIN	8,878	9,931	10,220	10,200	10,787	9,845
CARACAS	4,060	4,060	4,060	4,060	4,060	4,060	QUEENSTOWN	241	2,255	2,152	2,777	8,405	2,813
CELEBES	4,060	4,060	4,060	4,060	4,060	4,060	REIMS	1,966	3,361	3,992	3,884	1,934	3,896
CHONG	6,076	6,430	6,550	7,106	7,527	6,795	SAFRANCISCO	847	5,555	5,667	6,460	820	2,813
CHONGKONG	6,076	6,430	6,550	7,106	7,527	6,795	SHANGHAI	10,394	11,050	11,062	11,855	5,220	10,684
GEORGETOWN	4,060	4,060	4,060	4,060	4,060	4,060	SINGAPORE	8,878	9,931	10,220	10,200	10,787	9,845
HAMBURG	942	3,026	3,272	3,095	5,581	3,577	SYDNEY	11,617	10,070	10,082	10,875	6,848	9,704
HANKOW	4,060	4,060	4,060	4,060	4,060	4,060	TOKYO	11,617	10,070	10,082	10,875	6,848	9,704
HONGKONG	6,076	6,430	6,550	7,106	7,527	6,795	VALPARAISO	2,185	9,931	5,005	5,798	3,938	6,627
KANTON	6,076	6,430	6,550	7,106	7,527	6,795	VANCOUVER	6,847	6,445	6,457	7,260	6,027	6,027
KINGSTON	4,060	4,060	4,060	4,060	4,060	4,060	YOKOHAMA	11,617	10,070	10,082	10,875	6,848	9,704
LIVERPOOL	4,060	4,060	4,060	4,060	4,060	4,060	WILMINGTON	12,513	10,866	10,323	11,226	4,401	3,955
LYONS	4,060	4,060	4,060	4,060	4,060	4,060	WILLISTON	11,058	8,866	8,825	6,711	6,447	4,014
MANILA	9,554	10,949	11,180	11,472	5,999	11,405	YOKOHAMA	11,617	10,070	10,082	10,875	6,848	9,704
MARSEILLES	1,966	3,361	3,992	3,884	1,934	3,896							
MATRUH	1,966	3,361	3,992	3,884	1,934	3,896							
MONTVIDEO	6,133	5,586	5,735	6,306	8,078	5,723							
NEW YORK	3,036	599	560	1,451	6,069	7,350							
OSAKA	4,576	3,548	3,690	4,163	4,077	2,012							
PANAMA	4,576	3,548	3,690	4,									

Scale of Miles  
100 200 300 400 500 600 700 800 900 1000

INDUSTRIAL AREAS.....  
CANADIAN GOVERNMENT RAILWAYS.....  
CANADIAN PACIFIC RAILWAYS.....  
RAILWAYS.....



ИЗДАТЕЛЬСТВО



**COMPANY INCORPORATION AND  
TAXATION**



## CHAPTER VIII

### COMPANY INCORPORATION AND TAXATION

#### §1. INCORPORATION BY LETTERS PATENT

Business in Canada other than that requiring special legislation, or covered by special acts such as the Bank Act or Trust Companies Act, may be carried on as an individual venture, a registered partnership or a limited liability company. A limited company may be incorporated according to the laws of any province or of the Dominion. A provincial charter, however, permits the transaction of business in that province only, and licenses under the provisions of the Companies Act of any other province in which business is done, must be secured. Companies operating under a Dominion charter are not required to pay provincial fees or secure provincial licenses.\* Formerly they were required to do so, but by a recent decision of the Privy Council (25th February, 1921) it was ruled that under Dominion charter "Companies are not precluded by reason of not having been licensed or registered under those [Provincial companies] Acts from carrying on business or exercising their powers . . . and are not liable to the penalties prescribed for having so carried on business and exercised their powers." But companies operating under Dominion charter may acquire and hold land in a province only by license under any existing Provincial Mortmain Act. Dominion charters only are here considered. The procedure *in re* provincial charters does not materially differ, but company law varies in each province, and merits close investigation. No two provincial Companies Acts are identical, although with the exception of Quebec, where civil law is based on French precedent, they are similar in principle.

#### **Dominion Letters Patent**

(NOTE.—Bracketed figures refer to section of the Dominion Companies Act.)

The Secretary of State may by letters patent grant a charter to any number of persons, not less than five, and thereby "Constitute them a body corporate and politic" for any legal purpose other than the construction and operation of railway, telephone, telegraph, insurance, banking,

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\*All companies are, however, subject to provincial taxation.

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

trust, and loan companies (5). The application for such charter must contain,—

- (a) the proposed name of the company.
- (b) purposes of incorporation.
- (c) place in Canada which is to be its chief place of business.
- (d) proposed amount of capital stock.
- (e) number of shares and amount of each share.
- (f) name, address, and occupation of each applicant.
- (g) amount of stock taken by each applicant.

The application must be accompanied by a memorandum of agreement signed by the applicants; and various affidavits and proofs are required relative to the applicants and the application.

### Fees

The fees payable for the issue of letters patent are as follows:—

- (a) When authorized capital is £10,000 or less.....£ 20  
When authorized capital is more than £10,000 but not more than £40,000.....£ 20  
and 4s for every £200 or part thereof in excess of £10,000.
- (b) When authorized capital is more than £40,000 and not more than £100,000.....£ 50  
and 2s for every £200 or part thereof in excess of £40,000.
- (c) When authorized capital is more than £100,000.....£ 80  
and 10d for every £200 or part thereof in excess of £100,000.

Examples of fees according to tariff,—

£ 10,000.....	£ 20
15,000.....	40
30,000.....	40
50,000.....	55
80,000.....	70
120,000.....	84
200,000.....	100
400,000.....	140
1,000,000.....	260
2,000,000.....	460

Supplementary letters patent, issued subsequent to the granting of the charter, are subject to the following tariff:—

For changing name.....	£ 10
For any other purpose.....	10

Fees are paid in cash or by cheque (Canadian funds) to the Secretary of State prior to the issuance of letters patent. For ready estimates the fees quoted above are based on \$5.00 to the £ sterling; in practice, the Canadian Government does not consider exchange variation and accepts £1 as equivalent to the normal rate of \$4.86.



## COMPANY INCORPORATION AND TAXATION

### Regulations

Among the more important regulations the following may be cited:—

- (1) Notice of the granting of letters patent shall be made by the Secretary of State by one insertion in *Canada Gazette*. 7-8 Geo. V, C. 25, 5.
- (2) The company shall not commence business before 10 per cent of its authorized capital is subscribed and paid for (26).
- (3) The company shall at all times have an office in the city which is its chief place of business (30).
- (4) The company shall annually supply particulars relative to the capital and shares of the company, to the Secretary of State on the form prescribed. 7-8 Geo. V, C. 25, 13.
- (5) The company shall keep the word "limited" after its name, wherever it shall appear (33,114), particularly in respect of the seal of the company, advertisements, bills, cheques, drafts, endorsements, invoices, receipts, etc. (115).

### Supplementary Letters Patent

Supplementary letters patent may be granted to a company for,—

- (1) Changing corporate name (22).
- (2) Increasing, reducing or varying its corporate powers (Sec. 34, 4-5, Geo. V, c. 23, s. 4).
- (3) Increasing capital stock (52).
- (4) Decreasing capital stock (54).
- (5) Subdividing existing shares (51).
- (6) Authorizing the issue of share warrants. (4-5 Geo. V, c. 23, s. 2).
- (7) Otherwise varying provisions of letters patent (34).

Various regulations cover the issuance of supplementary letters patent, which may be ascertained by reference to the sections of the Companies Act cited.

### Variation in Provincial Legislation

It is very necessary for outside firms about to do business in Canada to consult competent authority in the province or provinces where such activity is contemplated. This for the reason that civil law is variable as between provinces. One province possesses Acts which are unknown in another. Certain provinces, for example, have mortmain acts; others not. In Western Canada an immigrant population and almost wholly agricultural conditions have necessitated special legislation in the form of the "Farm Implements Act." In Quebec, under the terms of the British North America Act, civil law is based on the Code Napoléon. Elsewhere it is based on English civil law. Again in Quebec there are no facilities for the registration of liens; in Ontario liens may be registered but are not subject to affidavit; in Nova Scotia they may not be registered except

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

accompanied by affidavit. Endless minor variations exist and the opinion of legal authority domiciled in the province is the only sure source of accurate information.

### §2. TAXATION OF CORPORATIONS

Companies, the head offices of which are in Canada, are required to pay income tax upon their annual profits in excess of £400. The tax is 10 per cent plus an additional tax of 5 per cent of the tax payable, the total tax, therefore, being  $10\frac{1}{2}$  per cent upon profits in excess of £400. When the business of a corporation is carried on entirely outside Canada and when its assets are situated entirely outside Canada, its profits are not liable to the Canadian tax.

The Business Profits War Tax, which corresponds to the British Excess Profits Duty, has now been removed.\*

There is no collection of income tax "at the source" by corporations when distributing dividends. The shareholder receives the full amount of the dividend. The dividends of corporations which are themselves liable to income tax are exempt from normal tax when received by the shareholders. This means that until the shareholder's income is over £1,000 the dividends are tax-free. Dividends paid to shareholders residing abroad are not liable to the Canadian tax.

In determining income all charges and expenses ordinarily and necessarily incurred to earn income are allowed as deductions from profits. This includes interest on loans.

By virtue of a provision in the Canadian Income Tax Act, the amount of tax paid to Great Britain or any of its self-governing colonies or dependencies for income tax in respect of the income of the taxpayer derived from sources therein, and the amount paid to any foreign country for income tax in respect of income derived therefrom, if such foreign country allows a similar credit to its taxpayers in respect of income derived from Canada, is allowed as a deduction from the Canadian tax. The object of this is to avoid double taxation. The most important foreign country coming within the scope of the above provision is the United States.

Corporations are permitted to submit statements based on their own fiscal year, the statement being used as the basis of taxation for the calendar year within which the fiscal year ends.

The provinces and municipalities are also empowered to collect income tax, but such taxation is of minor importance, and too involved in detail to be dealt with here.

Corporations are also subject to municipal taxation, based on the assessed value of real estate or property. This taxation is also variable, but ranges in total between 1s. 9d. and £3:0:0 per £100.

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\*The sales tax of the *War Revenue Act, 1914*, is dealt with on p. 95.

**A NOTE ON THE CANADIAN BANKING  
SYSTEM**





## CHAPTER IX

### A NOTE ON THE CANADIAN BANKING SYSTEM

The Canadian banking system differs widely from that of the United States. There are no "national" banks—such as the State banks or Federal Reserve banks. The system closely follows that of the United Kingdom, more particularly the Scottish. There is no Government control other than the restrictions of the Bank Act which limits the banks' constitution and activities but does not thereafter affect either policy or administration. There is not even a Government audit, but the Government requires a yearly audit to be made by some competent firm of accountants chosen from a list published in the official *Canada Gazette* and approved by the Minister of Finance or the shareholders of the bank.

In the hands of limited private enterprise, then, is practically all the industrial financial activity and credit systems of the Dominion. Thus the banks while not specifically national in character become essentially so in policy and operation, and are in continual co-operation with the Government in regard to financial matters. The Canadian Bankers Association, representative of all the chartered banks and incorporated by special Act of Parliament, considers and recommends to the Minister of Finance broad matters of policy or co-operation, but has no power to control any particular bank except in respect of note circulation.

The chartered banks of Canada, so called because they are incorporated under the particular terms of the Bank Act of Canada and not as limited companies under the Companies Act, are eighteen in number. They are listed in order of gross assets in the table overleaf.\*

The Banks are authorized to accept deposits, to deal in bullion, coin, acceptances and various bills; to make advances against general public securities, debentures and bonds of industrial corporations; to act as fiscal agents and to issue their own notes. The note circulation of each bank is restricted by law in proportion to its financial strength, and each bank must deposit, in what is known as the Note Circulation Guarantee Fund, which is controlled by the Canadian Government, an amount of either gold or of gold and Dominion Bank notes equal to 5 per cent of its own

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\*Since the above was written, negotiations have been instituted under which the Merchants Bank of Canada will be taken over by the Bank of Montreal.

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

note issue. In no case may the note issue exceed the paid-up capital except from September to February, when an additional issue equal to 15 per cent of combined capital and reserve is permitted. No bank may make loans against its own capital stock or that of any other chartered bank, or upon the direct security of real estate. These exceptions are to assure the reality of their aggregate paid-up capital and to maintain their assets in liquid and negotiable form. Mortgage and loan companies supply this deficiency.

The limited number of Canadian banks may at first appear a drawback in view of the large area of the Dominion. In point of fact exactly

CHARTERED BANKS OF CANADA

Name	Head Office	Paid Up Capital	Reserve	Total Assets
		\$	\$	\$
Royal Bank of Canada...	Montreal...	19,224,040	18,112,020	587,200,000
Bank of Montreal.....	Montreal...	22,000,000	22,000,000	562,900,000
Canadian Bank of Commerce.....	Toronto....	15,000,000	15,000,000	455,900,000
Bank of Nova Scotia.....	Halifax....	9,700,000	18,000,000	239,500,000
Merchants Bank of Canada.....	Montreal...	9,813,290	8,400,000	198,300,000
Union Bank of Canada...	Winnipeg...	7,999,940	5,600,000	164,900,000
Dominion Bank.....	Toronto....	6,000,000	7,000,000	140,200,000
Imperial Bank of Canada.	Toronto....	7,000,000	7,500,000	130,400,000
Bank of Toronto.....	Toronto....	5,000,000	6,000,000	102,500,000
Standard Bank of Canada	Toronto....	3,500,000	4,500,000	92,800,000
Molsons Bank.....	Montreal...	4,000,000	5,000,000	91,100,000
Bank of Hamilton.....	Hamilton...	4,860,770	4,630,385	86,600,000
Banque d'Hochelaga.....	Montreal...	4,000,000	3,900,000	74,600,000
Banque Nationale.....	Quebec....	2,000,000	2,300,000	69,600,000
Banque Provinciale du Canada.....	Montreal...	2,923,329	1,000,000	39,100,000
Home Bank of Canada...	Toronto....	1,959,000	500,000	26,700,000
Sterling Bank of Canada.	Toronto....	1,229,572	450,000	25,500,000
Weyburn Security Bank.	Weyburn, Sask....	524,000	225,000	3,800,000
		\$126,233,991	\$130,117,405	\$3,091,500,000

the reverse is the case. Centralization makes for simplicity of operation. By means of an admirable system of branches, each under a manager of fixed local power and with the right of reference to the head office, the country is adequately covered, and every small town, whether in well populated Quebec, in the foothills of the Rockies, or on the wide expanse of middle west prairies, boasts one or more local branches. No mining



KING AND YONGE STREETS, TORONTO  
DOMINION BANK BUILDING  
ROYAL BANK BUILDING  
C.P.R. BUILDING  
BANK OF HAMILTON BUILDING







HEAD OFFICE, BANK OF MONTREAL, MONTREAL, P.Q.



## A NOTE ON THE CANADIAN BANKING SYSTEM

town or new-born ranching centre has ever reached even potential importance without awakening one morning to find a new sign on the main street—that of such and such a bank—and an energetic manager and accountant prepared to transact business. This almost automatic expansion of the banking system has been at once romantic in its history and of incalculable value in the development of the country. In brief, it may be said that the whole genius of the system lies in its branches of which there are about four thousand throughout the Dominion. Nothing could be better designed to meet the needs of a sparsely populated and widespread country. The system is both flexible and elastic. All deposits find their way to the head office and are there available in aggregate for use as occasion demands, as for example, to finance the movement of western wheat during the autumn months. At the same time the small town customer may secure the financing of his products at any point, no matter how far distant, by dealing solely with his local manager. He has in addition the distinct benefit of the advice of the district superintendent or in turn the general manager at the head office.

In other respects the limited number of chartered banks is an actual advantage. By custom the borrower deals with one bank only, or by common consent with two, or, at most, three. As a result, the local manager is in close touch with his client, is fully conversant with the details of his business, is aware that he is not seeking indiscriminate credit, and is, therefore, in a position to advance greater amounts than would be possible under a more diversified system.

Since the war the branch system of the Canadian banks has been greatly extended. Outside the Dominion branches may now be found in the United Kingdom, France, Spain, Italy, British West Indies, Cuba, Mexico, in most of the countries of Central and South America and in the United States. The banks are thus in close touch with the foreign buyer or importer and may gauge his responsibility and value to their Canadian client.

Next in financial importance to the chartered banks are the trust companies, of which there are about twenty-five, either independent in operation or affiliated with one or other of the chartered banks. Their operations do not conflict with legitimate banking, as they are almost wholly confined to trusteeships and the management of estates.

The standard currency of Canada is Dominion Government and Chartered Bank notes. Silver is legal tender up to ten dollars. Gold is minted and circulated, but not to the same extent as in the British Isles.





## APPENDICES



## APPENDIX A

### AN ANALYSIS OF INDUSTRIAL CAPITAL IN CANADA

The statistical tables which follow are published to show the place to which United States industries and United States capital have attained in Canadian industrial development. The figures given, which are for the fiscal year ending March, 1919, and have been compiled by the Dominion Bureau of Statistics are exceedingly conservative, for during the calendar years 1919 and 1920 the influx of industries became more than pronounced ever before. For example, during these years in Toronto alone there were established 46 additional United States industries, as compared with 18 Canadian and 4 British (Report of Toronto Harbour Commission, 1920). When the compilation of 1920 figures is complete it may be found that the 34 per cent shown in the first table as the proportion held by United States capitalists in Canadian industries has increased to nearly 50 per cent, and that the British percentage has increased little or not at all.

It seems hardly necessary to comment on this situation. If United States capital is attracted to such a remarkable extent by Canadian resources and industrial opportunities, surely they are worth more careful consideration by the United Kingdom. To put it briefly, unless the share held by United States capital in the control and exploitation of the majority of Canadian manufactures and raw materials is to be predominant, British enterprise and British capital must assume their share of both the responsibility and the reward.

(1) STOCKS, BONDS AND OTHER SECURITIES HELD BY INCORPORATED AND JOINT STOCK COMPANIES ENGAGED IN THE MANUFACTURING INDUSTRIES OF CANADA IN 1918—PAR VALUES.

Nature of Security	Owned by 8,130,368 individual holders in			
	Canada	Great Britain	United States	Other Countries
	\$	\$	\$	\$
Stocks.....	790,512,678	136,686,566	494,706,199	13,838,322
Bonds.....	144,246,283	15,104,859	60,961,360	2,614,200
Other securities.....	10,684,697	1,966,400	275,618	768,800
Totals.....	945,443,658	153,757,825	555,943,177	17,221,322
Approximate percentage.....	56	9	34	1

N.B.—There are in addition to the securities above mentioned "Bearer Bonds," to the value of \$25,984,786, and "Bearer Stocks" to the value of \$3,395,000, the location of which cannot be definitely stated.

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

### (2) STOCKS, BONDS AND OTHER SECURITIES HELD BY INCORPORATED AND JOINT STOCK COMPANIES IN SPECIFIED MANUFACTURING INDUSTRIES IN CANADA IN 1919, AT PAR VALUATION.

#### LUMBER INDUSTRY, 1919.

Nature of Security	Owued in Canada	Owued in United States	Owued in United Kingdom	Owued in other Countries	Total
	\$	\$	\$	\$	\$
Stocks.....	103,974,899	50,546,534	8,219,994	1,490,395	164,231,822
Bonds.....	21,844,594	2,321,351	14,133,276	106,307	38,405,528
Other securities...	192,633	1,926,400	6,000	.....	2,125,033
Totals.....	126,012,126	54,794,285	22,359,270	1,596,702	204,762,383
Approximate per-centage.....	61	27	11	1	100

#### PULP AND PAPER INDUSTRY, 1919.

Stocks.....	107,548,530	42,995,540	5,428,125	6,007,950	161,980,145
Bonds.....	21,652,990	5,648,000	2,627,681	2,511,178	32,439,849
Other securities...	6,581,500	53,330	349,200	.....	6,984,030
Totals.....	135,783,020	48,696,870	8,405,006	8,519,128	201,404,024
Approximate per-centage.....	68	24	4	4	100

#### AGRICULTURAL IMPLEMENT INDUSTRY, 1919.

Stocks.....	27,647,562	20,983,500	4,062,300	798,200	53,491,562
Bonds.....	3,508,500	19,500	3,073,600	20,900	6,622,500
Other securities...	8,504,900	.....	.....	.....	8,504,900
Totals.....	39,660,962	21,003,000	7,135,900	819,100	68,618,962
Approximate per-centage.....	58	31	9.8	1.2	100

#### FOUNDRY AND MACHINE SHOP INDUSTRY, 1919

Stocks.....	43,721,958	12,965,937	4,909,964	36,107	61,633,966
Bonds.....	4,097,379	1,718,374	815,772	1,788	6,633,313
Other securities...	115,141	19,400	.....	.....	134,541
Totals.....	47,934,478	14,703,711	5,725,736	37,895	68,401,820
Approximate per-centage.....	70	21	8.4	0.2	100



## AN ANALYSIS OF INDUSTRIAL CAPITAL IN CANADA

### (2) STOCKS, BONDS AND OTHER SECURITIES HELD BY INCORPORATED AND JOINT STOCK COMPANIES IN SPECIFIED MANUFACTURING INDUSTRIES IN CANADA IN 1919, AT PAR VALUATION—*Con.*

#### BUILDING AND CONSTRUCTION INDUSTRY, 1919.

Nature of Security	Owned in Canada	Owned in United States	Owned in United Kingdom	Owned in other Countries	Total
	\$	\$	\$	\$	\$
Stocks.....	18,086,990	3,905,250	17,988,800	93,700	40,074,740
Bonds.....	3,425,800		3,000,000		6,425,800
Other securities...	96,090				96,090
Totals.....	21,608,880	3,905,250	20,988,800	93,700	46,596,630
Approximate per-centage.....	46.4	8.4	45	0.2	100

#### ELECTRICAL APPARATUS INDUSTRY, 1919.

Stocks.....	15,419,908	21,468,990	5,477,016	1,167,500	43,533,414
Bonds.....	389,300	91,300	15,000		495,600
Other securities...	64,600	12,000			76,600
Totals.....	15,873,808	21,572,290	5,492,016	1,167,500	44,105,614
Approximate per-centage.....	36	49	12	3	100

#### COTTON TEXTILE INDUSTRY, 1919.

Stocks.....	25,126,600	2,044,920	731,100	135,600	28,038,220
Bonds.....	10,590,500		1,654,450		12,244,950
Other securities...					
Totals.....	35,717,100	2,044,920	2,385,550	135,600	40,283,170
Approximate per-centage.....	88.7	5	6	0.3	100

#### MEATPACKING INDUSTRY, 1919.

Stocks.....	16,154,290	14,809,820	55,300	399,800	31,419,110
Bonds.....	4,404,500		2,000	101,500	4,508,000
Other securities...					
Totals.....	20,558,790	14,809,820	57,300	501,300	35,927,110
Approximate per-centage.....	57	41.4	0.2	1.4	100

# CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

## (2) STOCKS, BONDS AND OTHER SECURITIES HELD BY INCORPORATED AND JOINT STOCK COMPANIES IN SPECIFIED MANUFACTURING INDUSTRIES IN CANADA IN 1919, AT PAR VALUATION—*Con.*

### RUBBER INDUSTRY, 1919.

Nature of Security	Owued in Canada	Owued in United States	Owued in United Kingdom	Owued in other Countries	Total
	\$	\$	\$	\$	\$
Stocks.....	13,133,374	9,786,900	734,050	32,200	23,686,524
Bonds.....	406,100	7,250,500	1,500		7,658,100
Bearer bonds.....	Not recorded	as to ownership.		2,600,000	2,600,000
Other securities.....					
Totals.....	13,539,474	17,037,400	735,550	2,632,200	33,944,624
Approximate percentage.....	40	50	2	8	100

### FLOUR AND CEREAL MILLS INDUSTRY, 1919.

Stocks.....	27,533,607	1,077,625	1,342,225	489,050	30,442,507
Bonds.....	3,337,021	1,925	6,160		3,345,106
Other securities.....	79,416				79,416
Totals.....	30,950,044	1,079,550	1,348,385	489,050	33,867,029
Approximate percentage.....	91.5	3.2	3.8	1.5	100

### PATENT OR PROPRIETARY MEDICINES, 1919.

Stocks.....	3,275,819	23,439,650	488,797	38,691	27,242,957
Bonds.....	5,000	200,000			205,000
Other securities.....					
Totals.....	3,280,819	23,639,650	488,797	38,691	27,447,957
Approximate percentage.....	12	86	1.8	0.2	100

### PAINT AND VARNISH INDUSTRY, 1919.

Stocks.....	8,811,028	10,065,500	340,600	9,600	19,226,728
Bonds.....	1,050,000	350,000			1,400,000
Coupon or Bearer bonds.....	No record	of country of ownership.		1,838,500	1,838,500
Other securities.....					
Totals.....	9,861,028	10,415,500	340,600	1,848,100	22,465,228
Approximate percentage.....	44	47	1.5	7.5	100

## AN ANALYSIS OF CANADIAN CAPITAL IN CANADA

### (2) STOCKS, BONDS AND OTHER SECURITIES HELD BY INCORPORATED AND JOINT STOCK COMPANIES IN SPECIFIED MANUFACTURING INDUSTRIES IN CANADA IN 1919, AT PAR VALUATION—*Con.*

#### SUGAR INDUSTRY, 1919.

Nature of Security	Owned in Canada	Owned in United States	Owned in United Kingdom	Owned in other Countries	Total
	\$	\$	\$	\$	\$
Stocks.....	11,116,696	3,221,612	1,594,824		15,933,132
Bonds.....	1,724,500				1,724,500
Coupon bonds.....				1,345,000	1,345,000
Other securities.....					
Totals.....	12,841,196	3,221,612	1,594,824	1,345,000	19,002,632
Approximate per-centage.....	67.2	17.2	8.4	7.2	100

#### AUTOMOBILE INDUSTRY, 1919.

Stocks.....	5,912,800	9,410,200			15,323,000
Bonds.....					
Other securities.....					
Totals.....	5,912,800	9,410,200			15,323,000
Approximate per-centage.....	39	61			100

#### CAR CONSTRUCTION, 1919.

Stocks.....	3,426,000	8,100,000			11,526,000
Bonds.....	2,100,000				2,100,000
Other securities.....					
Totals.....	5,526,000	8,100,000			13,626,000
Approximate per-centage.....	40.4	59.6			100

Exclusive of Railway Car Shops.

#### ARTIFICIAL ABRASIVES INDUSTRY, 1919.

Stocks.....	53,700	11,400,075	50,500	2,500	11,506,775
Bonds.....					
Other securities.....					
Totals.....	53,700	11,400,075	50,500	2,500	11,506,775
Approximate per-centage.....	0.4	99.1	0.4	0.1	100

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

### (2) STOCKS, BONDS AND OTHER SECURITIES HELD BY INCORPORATED AND JOINT STOCK COMPANIES IN SPECIFIED MANUFACTURING INDUSTRIES IN CANADA IN 1919, AT PAR VALUATION—*Con.*

#### DRUG AND CHEMICAL INDUSTRY, 1919.

Nature of Security	Owned in Canada	Owned in United States	Owned in United Kingdom	Owned in other Countries	Total
	\$	\$	\$	\$	\$
Stocks.....	960,869	2,707,100	3,700,331	.....	7,368,300
Bonds.....	2,720,000	.....	.....	.....	2,720,000
Other securities.....	.....	.....	121,666	.....	121,666
Totals.....	3,680,869	2,707,100	3,821,997	.....	10,209,966
Approximate per-centage.....	36	27	37	.....	100

#### AUTOMOBILE ACCESSORY INDUSTRY, 1919.

Stocks.....	645,580	8,869,400	15,200	.....	9,530,180
Bonds.....	.....	500,000	.....	.....	500,000
Other securities.....	.....	.....	.....	.....	.....
Totals.....	645,580	9,369,400	15,200	.....	10,030,180
Approximate per-centage.....	6.5	93.5	.....	.....	100

#### BRASS AND COPPER CASTINGS INDUSTRY, 1919.

Stocks.....	5,446,420	4,200,900	9,700	.....	9,657,020
Bonds.....	.....	234,000	.....	.....	234,000
Other securities.....	.....	.....	.....	.....	.....
Totals.....	5,446,420	4,434,900	9,700	.....	9,891,020
Approximate per-centage.....	55	44.9	0.1	.....	100

#### CONDENSED MILK INDUSTRY, 1919.

Stocks.....	1,974,300	1,789,980	89,400	552,870	4,406,550
Bonds.....	200,000	99,000	.....	.....	299,000
Other securities.....	.....	.....	.....	.....	.....
Totals.....	2,274,300	1,888,980	89,400	552,870	4,705,550
Approximate per-centage.....	48.5	40	0.5	11	100

#### REFINED PETROLEUM, 1919.

Stocks.....	2,079,400	2,353,295	10,800	550	4,444,045
Bonds.....	.....	.....	.....	.....	.....
Other securities.....	.....	.....	.....	.....	.....
Totals.....	2,079,400	2,353,295	10,800	550	4,444,045
Approximate per-centage.....	46.7	53.1	0.2	.....	100



## APPENDIX B.

### THE PROBLEMS OF THE CANADIAN MARKET

An incomplete knowledge of its peculiar conditions and characteristics has apparently led British manufacturers to regard the Canadian market as similar to that of other countries and colonies of the British Empire. It would seem that in the mind of not a few British manufacturers the idea has arisen that in many respects Canada is analogous to Australia, New Zealand, or British India. In reality, market conditions are very different. Canada is herself a manufacturing country and as a result the market is largely affected by domestic production, a condition the influence of which is less marked in either Australasia\* or India. In the latter countries British commercial activity is met by equal competition; that is to say, by the competition of other European or United States manufacturers all working at great distance and marketing their goods in countries comparatively little affected by domestic production. In Canada the British manufacturer is met not only by domestic production but also—and this is the greatest factor—by an intense and spirited competition from the United States. There are also minor factors, such as climate, which influence the seasonal production of clothing, footwear, and other articles, to be taken into consideration.

United States competition has produced results which should be fully appreciated. It is inevitable that the proximity of a great industrial nation should have a marked influence in certain directions, notably as follows:—

1. *Extensive Advertising.*—The United States manufacturer is a sound, aggressive and intelligent advertiser. Almost every magazine or periodical circulated in Canada is loaded with admirable United States advertisements. The result is that in many instances the Canadian consumer is thoroughly imbued with an appreciation of United States goods, not particularly because of their intrinsic superiority, but because he is continually faced with their advertisements and has therefore developed a subconscious tendency to consider them first when purchasing. The circulation of United Kingdom trade magazines and periodicals is too limited to have much effect.

2. *Intimate Sales Methods.*—The intensive and intimate methods of United States travellers and sales agents have accustomed the Canadian purchaser to the personal visit of the seller, who will take endless trouble in describing and qualifying his goods. Too much emphasis cannot be placed on the energy, initiative and ability of United States commercial travellers.

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\*The last comparable figures (1917) give the number of manufacturing establishments in Australia and Canada as follows:—Australia, 15,179; Canada, 34,392. More recent figures (1921) are available for British branches—Australia 90; Canada 61.

## CANADA A FIELD FOR BRITISH BRANCH INDUSTRIES

3. *Quick Decision.*—The Canadian consumer expects quick decision on contracts or quotations of prices. In this respect it may be noted that United States firms in general allow their representatives a free hand, and it is in consequence difficult for a representative of a United Kingdom firm to compete. It becomes almost impossible to do so if the British representative must cable for decisions on prices and the reply be delayed for even two or three days. Many instances might be cited where, without the slightest question as to the quality of the British goods, British firms have lost orders wholly because of the inability of their representative to accept the order in time.

4. *Quick Deliveries.*—The proximity of the United States plant or factory has accustomed the Canadian consumer to quick deliveries. Furthermore, it ensures replacements or the supply of parts, repeat orders, etc., which under most circumstances could not be so advantageously handled by a firm in the United Kingdom.

5. *Standardization of Patterns.*—With regard to many commodities, notably clothing, hardware, and machinery, the Canadian consumer has through long association, advertisement and use, become inclined to follow United States patterns and models.

6. *Lighter and Cheaper Goods.*—Again, the proximity of the United States has afforded them another advantage. The United States manufacturer is in a position to study at first hand the exact requirements of each community or district and thereby modify the quality and specifications of his goods in accordance with the demand and purchasing power. In this respect it is exceedingly difficult for the United Kingdom firm to compete from across the Atlantic.

What, then, has been the result of these influences? It is this: Canada has become a customer of the United States, second only in importance to the United Kingdom itself. The *per capita* purchasing power in Canada is very high, and the quantity of United States manufactured products consumed in Canada is enormous. Importations of merchandise for the fiscal years 1920 and 1921 amounted to \$801,097,318 and \$856,613,430 respectively which, although including coal, steel, cotton and other raw materials, were largely made up of manufactures and finished products,—eloquent testimony to the field which exists for added industries in the Dominion. This consumption of United States goods is in the face of a direct, unquestioned, and substantial preference for British goods, the high premium on United States funds, and a non-preferential tariff on importations from the United States. It may be almost wholly ascribed to proximity and aggressive salesmanship. As one British firm put it: "British manufacturers cannot hope to make real headway in this market by distributing their goods through agents, owing to the impossibility of properly realizing the requirements of the Canadian user through a third party, coupled with the necessarily slow delivery of original orders and the nuisance of obtaining surplus parts when required. In our view the only sound policy is to establish a Canadian factory with a competent staff capable of handling business

## THE PROBLEMS OF THE CANADIAN MARKET

intelligently, modifying designs where necessary to suit Canadian requirements, and taking care of repairs and replacements accurately and promptly."

In brief, Canada, not yet sufficiently developed industrially to supply her own demands, is buying yearly many million dollars worth of manufactured goods from outside sources, in very great measure because United Kingdom manufacturers cannot compete at a distance and have not sufficiently considered the possibilities of branch establishments in the Dominion. No British firm having regard to the future as well as to the present can afford to ignore the large Canadian market, which in spite of its difficulties, not only offers scope at the present for very considerable sales, but will undoubtedly afford far greater scope as Canada develops and her population increases.

One point particularly must be borne in mind, that unless the British manufacturer is producing an exclusive line which sells itself, the establishment of a branch factory in Canada should not materially interfere with British export, but should find a new market, at present satisfied by United States products. All things considered, the United Kingdom manufacturer might at least consider sending out a representative, if possible one with some previous knowledge of Canadian and United States conditions, to investigate the markets and manufacturing possibilities of Canada. It is believed that such action would result in a greater appreciation of, and interest in, the opportunities which the Dominion offers.



## REFERENCES

The Director, Commercial Intelligence Service, Department of Trade and Commerce, or any of the Canadian Government Trade Commissioners referred to below, will be pleased to receive communications from British manufacturers establishing or considering the establishment of branch factories in Canada, in order that the services of the department may be placed at their disposal.

Detailed information may be had from the following sources:—

Canada in general.....	Office of the High Commissioner for Canada, London.
Provinces.....	Agents General for the Provinces, London.
Trade and Commerce.....	(a) Department of Trade and Commerce (Commercial Intelligence Service), Ottawa.
	(b) Canadian Government Trade Commissioner, 73 Basinghall Street, London, E.C. 2.
	(c) Canadian Government Trade Commissioner, 4 St. Ann's Square, Manchester.
	(d) Canadian Government Trade Commissioner, 31 North John Street, Liverpool.
	(e) Canadian Government Trade Commissioner, Sun Building, Clare Street, Bristol.
	(f) Canadian Government Trade Commissioner, 87 Union Street, Glasgow, Scotland.
Industry and Manufacture.....	Canadian Manufacturers Association, Toronto.
Labour.....	Department of Labour, Ottawa.
Water-power.....	(a) Dominion Water Power Branch, Department of the Interior, Motor Building, Ottawa.
	(b) Companies listed on power map.
Natural Resources.....	Natural Resources Intelligence Branch, Department of the Interior, Motor Building, Ottawa.
Company Incorporation.....	Department of the Secretary of State, West Block, Ottawa.
Taxation, Dominion.....	Commissioner of Taxation, East Block, Ottawa.
Taxation, Provincial and Municipal....	See specific industrial areas.
Tariffs, Canadian.....	Commissioner of Customs, Ottawa.
Tariffs, foreign, applicable to Canada..	Foreign Tariffs Division, Department of Trade and Commerce, Ottawa.
Ocean Transportation and Freight Rates.....	(a) Canadian Government Merchant Marine, Montreal.
	(b) Canadian Pacific Steamships, Ltd., and others, Montreal.
Inland Transportation and Freight Rates.....	(a) Canadian Government Railways, Toronto.
	(b) Canadian Pacific Railway, Montreal.
Specific Industrial Areas.....	Industrial Commissioner, c/o Chamber of Commerce, or Secretary, Board of Trade, in any city of the area.



## THE COMMERCIAL INTELLIGENCE SERVICE

The Commercial Intelligence Service maintained by the Department of Trade and Commerce is designed to consider and further the interests of Canadian trade in other parts of the Empire and in foreign countries. To this end there are established throughout the world offices administered by Trade Commissioners. These Trade Commissioners make periodical reports upon trade and financial conditions, variations in markets, and the current demand or opportunity for Canadian products. They also secure and forward to the department in Ottawa specific inquiries for Canadian goods and in general exert their best efforts to the development and expansion of overseas markets.

These reports, inquiries, etc., are summarized weekly in the Bulletin issued by the Commercial Intelligence Service at Ottawa, which is supplied gratis to Canadian manufacturers and others interested. The Ottawa office is also concerned with investigating and reporting upon the conditions affecting export trade, such as packing, documentation, changes in foreign tariffs, and so forth. There is no charge in connection with the service.

In addition to the offices in the United Kingdom already referred to, Canadian Government Trade Commissioners are located in Bridgetown, Barbados; Kingston, Jamaica; Shanghai; Havana; Paris; Rotterdam; Milan; Yokohama; Auckland, New Zealand; Cape Town; Calcutta; Singapore; and New York. There are in addition Canadian Commercial Agents in Sydney, N.S.W.; Christiania; and Nassau, Bahamas. Under an arrangement made by the Minister of Trade and Commerce of the Dominion of Canada with Sir Edward Grey, 1912, Canadian manufacturers, exporters and others interested in trade matters may secure information and advice from H. B. M. Consuls in Chile, Colombia, Ecuador, Egypt, Mexico, Panama, Peru, Portugal, Spain, Sweden, Switzerland, Uruguay, Venezuela.

Canadian Government Trade Commissioners are at the present time using Bentley's complete phrase code.



## GENERAL INDEX





# GENERAL INDEX

	PAGE
Abrasives (artificial).....	17
Agriculture.....	30
Alcohol (industrial).....	26
Arsenic.....	13
Asbestos.....	13
Atlantic Area of Canada.....	3
Australia	
Manufacturing establishments in	
<i>foot note</i>	123
Bank Act, Dominion.....	111
Banking	
Canadian system of.....	111
Banks	
chartered, table of.....	112
Barytes.....	14
Bentonite.....	<i>foot note</i> 15
Building and ornamental stone.....	14
Canals.....	100
Capital	
Industrial in Canada, analysis of,	
in total.....	117
Industrial in Canada, analysis of,	
by industries.....	118-122
Cement.....	15
Central Station supply system.....	73
Chemical industry.....	28
Chromite.....	17
Clay.....	15
Clay, China.....	21
Coal.....	15
Cobalt.....	16
Commercial Intelligence Service....	127
Copper.....	16
Corundum.....	17
Crops (field).....	31
Currency (Canadian).....	113
Dairying.....	32
Education (technical).....	53
Electric stations (central).....	73
Employment Service of Canada.....	52
Exports of Canada.....	43
Factory Acts	
Summary of.....	62
Feldspar.....	17
Fish and fish-canning.....	29
Fluorspar.....	18
Forest products.....	24
Fruit and fruit-canning.....	33
Fur farming.....	28
Gold.....	18
Graphite.....	18
Grindstones.....	15
Gypsum.....	18

	PAGE
Harbours ( <i>see also</i> Shipping).	
Esquimalt.....	9
Halifax, N.S.....	4
Montreal.....	5
Prince Rupert.....	9
Quebec.....	5
St. John, N.B.....	4
Vancouver.....	8
Victoria.....	8
Hydro-electric power ( <i>see</i> Power).	
Immigration.....	50
Imports of Canada.....	42
Industrial Councils	
Establishment of.....	56
Iron.....	19
Kaolin.....	21
Labour	
Economic influences affecting.....	49
Summary of legislation affecting..	58
Lead.....	21
Legislation, provincial, variation in	
company incorporation.....	107
Letters Patent,	
Dominion.....	105
Fees.....	106
Incorporation by.....	105
Regulations governing.....	107
Supplementary.....	107
Limestone.....	14
Livestock.....	31
Magnesite.....	21
Manganese.....	18, 22
Manufactures,	
Comparative table of, in principal	
cities.....	40
Growth of export of.....	41
Statistics of, 1900-1915.....	38
Marble.....	14
Market (Canadian)	
Conditions affecting.....	123
Maritime Provinces	
Economic conditions in.....	3
Mica.....	22
"Midlands of Canada".....	5
Minerals (economic).....	13
Molybdenum.....	22
Montreal (city of).....	6
Natural gas.....	23
Niagara-Windsor Peninsula.....	7
Nickel.....	22
Ontario Hydro-Electric Power Com-	
mission and allied systems.....	80

# GENERAL INDEX—*Concluded.*

	PAGE		PAGE
Pacific Slope,		Tariff	
Economic conditions in the.....	8	Canadian Customs	
Petroleum.....	23	Valuation of depreciated cur-	
Power		rency.....	94
Cost of.....	85	Preferential	
Supply of in		British West Indies.....	92
Alberta.....	77	Cyprus.....	92
British Columbia.....	76	Great Britain.....	91
Manitoba.....	78	New Zealand.....	92
New Brunswick.....	83	Samoa.....	92
Nova Scotia.....	84	South Africa.....	92
Ontario.....	79	Tax (Sales)	
Prince Edward Island.....	84	Under <i>War Revenues Act, 1915</i> ...	95
Quebec.....	81	Taxation.....	108
Saskatchewan.....	78	Thompson (Nichol)	
Yukon.....	77	Report on iron market of the Paci-	
Table of average monthly bills..86,	87	fic Coast by.....	20
Prairie Provinces		Timber.....	24
Economic conditions in.....	8	Toronto (city of).....	7
Pulp and paper industry.....	25	Trade Tables	
Pulpstones.....	15	Exports and imports, 1914, 1920,	
Pyrites.....	23	1921.....42, 43, 44	
		Trade Unionism.....	55
Quebec (city of).....	5	Turpentine.....	26
Railways		United States	
Canadian National.....	99	Branch industries in Canada.....	45
Canadian Pacific.....	99	Competition and sales methods in	
References.....	126	Canada.....	123
Resin.....	26	Industrial capital in Canada.....	117
Rubber industry.....	39	Manufactured articles in Canada,	
		sale of.....	124
Salt.....	24	Vancouver (City of).....	8
Shark industry.....	29	Vegetables and vegetable canning...	33
Shawinigan Water and Power Co....	82	Wages.....	63
Shipping ( <i>see also</i> Harbours).....	100	Waterpowers	
Silver.....	24	Central station supply system....	73
Slate.....	14	Compared with coal.....	72
South Western Quebec and Southern		In Canada, table of, available and	
Ontario, economic conditions of..	5	developed.....	69
Strikes and lockouts.....	57	Of British Empire.....	67
Talc.....	18, 24	Of various provinces ( <i>see</i> Power).	
Tariff		Weekly Bulletin (Department of	
Canadian Customs.....	91	Trade and Commerce).....	127
Anti-dumping clause.....	94	Working hours.....	63
Drawbacks.....	94	Workmen's compensation	
Intermediate.....	93	Summary of provisions governing.60,	61
		Zinc.....	24











